

# The Iron Age

A Review of the Hardware, Iron and Metal Trades.

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## Speed on English Railways.

The London *Railway News* gives the following figures from a paper by Mr. E. Foxwell on English express trains:

Run.	Miles.	Run in hrs. & min.	Run ave.
Grantham and King's Cross	105	2 4	51
Leicester and St. Pancras	99	2 7	47
Carlisle and Edinburgh	98	2 20	42
Nuneaton and Willesden	91	1 57	47
Derby and Liverpool	91	2 3	44
Preston and Carlisle	90	2 10	41
Skipton and Carlisle	86	1 55	45
Chester and Holyhead	84	2 0	42
Rugby and Euston	82	1 50	45
Grantham and York	82	1 39	50
Newcastle and York	80	1 32	47
Victoria and Dover	78	1 45	44
Paddington and Swindon	77	1 27	53
Canterbury and Dover	74	1 39	45
Carlisle and Carlstairs	73	1 31	48
Total	406	58 45	23,550

"Running average" includes time of making stops at stations. Its difference from "average speed" or time from platform to platform, excluding time lost in stops, is shown in the following table of the long runs in England:

No. of Aver.	Run's trains.	speed.	aver.	age.
Midland	106	53	45	5,312
Northumbrian	98	60	45	5,380
Great Northern	49	73	50	3,616
Great Western	24	50	48	1,344
Great Eastern	24	56	42	1,362
Brighton	23	45	42	1,047
Northeastern	20	56	44	1,120
Southwestern	18	47	44	615
Southeastern	12	66	42	756
Chatham and Dover	8	63	45	504
Caledonian	8	59	45	476
Glasgow and Southwest	8	58	44	468
Manch., Shef. and Lin.	8	48	43	380
North British	7	60	40	428
Total	406	58	45	23,550

Mr. Foxwell thus concludes his very interesting paper: "During the last ten years the mileage of our express trains has, roughly speaking, increased about 25 per cent., and their average speed about two and a half miles per hour, while the weight of the train has increased from 30 to 50 per cent. in many cases. (Third-class passengers came into express generally about 1873.) This has taken place during a long-drawn depression of trade, and is, perhaps, one of the *sequels* of that depression (cheap materials). It brings out, however, the pleasant fact that industrial dullness has not demoralized the excellence of workmanship in those industries essential to a railway. The mileage and speed of express trains in England is so much greater than in the rest of the world that any reflection on the fact must send a glow of satisfaction through every Englishman. For what is implied by this superior speed? We quote from the address of Mr. Perry Westmacott to the Institute of Mechanical Engineers, at their meeting in Belgium last July, an address entitled 'High Speed and High Workmanship':

"Mechanical energy increases as the square of the speed, and so it may be said that the mental energy and skill required to carry on work increases also at something like the square of the speed with which the work is performed. The materials used must be far stronger and far finer; everything must be well proportioned and balanced; there must be the most perfect arrangement in each structure, and in every part of a structure, and thus we may say the higher the speed the better the work."

## The Livadia.

The celebrated yacht *Livadia*, built by the well-known Scotch shipbuilding firm, Messrs. John Elder & Co., of Glasgow, some three years ago, is now a coal bulk in the harbor of Sebastopol, Russia. The *Livadia*, as many of our readers will remember, was the steam yacht built for the Czar of Russia in 1880, and never before had there been such an extravagant innovation upon naval architecture. The vessel was constructed with tiers of deck houses, and the hull was lost in a projecting basement which supported a *façade* of pillars. "To gain an idea of the internal accommodation," said an English yachting paper at the time of her completion, "is not easy from an external view, which exhibits the broadside of the yacht, with two tiers of deck houses over it. But, besides the hold, the yacht is built with four decks—platform deck, main deck, upper deck and awning deck—crowded with saloons and staterooms, and containing, besides the equipment of a steamer and a palace, novelties which must leave like the impossibilities of fiction and leave the *Livadia* unrivaled. To tread corridors paved with marble and find bulkheads paneled with the most exquisite patterns of tiles hardly lessens the astonishment of discovering that a magnificent marble fountain decorates the Emperor's saloon, and that baths for the imperial family are hewn out of solid blocks of marble. Nothing will better suggest the dimensions of the yacht than to learn that coal bunkers, holding 200 and 300 tons of coal, are filled by means of a railway connecting with various coal shutes. Among other surprises are the engines for the electric lights which illuminate the interior as well as the exterior of the yacht, for the yacht will carry forward a masthead lantern, which is to be an electric light bright enough to get mistaken in the English Channel for the South Foreland under way. The side lights are electric lanterns, which will display to passing vessels an unaccountable brilliancy. These but suggest some of the wonders of the *Livadia*, which must carry to the borders of the Black Sea more startling surprises than she has left behind in the Clyde, for it will hardly be doubted that one purpose

before the designer of the yacht has been to magnify the awe and mystery with which the credulous Asiatic regards the life and person of the White Czar."

The engines and boilers occupied an immense amount of space in the center of the vessel. The central screw and the two quarter screws were worked by three separate engines, with separate boilers, and were altogether unconnected. The engines were of 10,500 horse-power. Upon the upper deck ranged an immense house from the stern to within 20 feet of the bow. This deck house was so much narrower than the steamer that a gangway was afforded on both sides between the house and the rail. The after part of this house was occupied by the apartments of the Grand Duke Constantine and by staterooms for the officers of the ship and the suite of the imperial family. Staterooms of comfortable dimensions and fitted with elegant furniture surrounded all the corridors and the sides of the vessel. The fore part of the upper deck house was the imperial dining saloon, with the sitting-room, boudoir and bedrooms of the Emperor and Empress on each side. The Empress occupied the port side, and upon the same side

men. She was a failure. This was demonstrated soon after completion, as in a gale in the Bay of Biscay she was almost wrecked, and those on board never wanted to make another trip in her. And yet it was said, upon her completion, "that the odd appearance of the vessel is due to a profound consideration of scientific difficulties; that which looks like the wildest of vagaries is the result of ingenious calculations; and that without any purpose besides the practical fulfillment of theoretical principles has this strange and most unaccountable vessel been designed."

## The Iron Trade Outlook in England.

Under this head the London *Ironmonger* has the following:

Now that the end of the business year is so near at hand, the future of the iron trade is being discussed with an eagerness which in many quarters amounts to positive anxiety. The operations of many months past have been on a fairly large scale, but almost all values have been steadily declining, until at the present time it is palpable that in some lines of business only a narrow margin

possible remedy under the circumstances, namely, the stoppage of a number of furnaces, mills and forges. In this country we move more slowly, and may be expected to imitate our American cousins under compulsion—that is to say, no firm here will stop which can struggle on, and no organized policy of restriction will be adopted, owing to the want of harmony among the ironmasters.

In the Bessemer steel industry matters are more under control, and we may possibly witness a concerted limitation of the output therein. In the iron trade, on the other hand, the fitness—that is to say, the best equipped, the best situated and best financed concerns—will survive, and the weak will go to the wall. More or less serious trouble may arise during the process of extinction, but the trade will ultimately benefit, and capital will find no attraction in the business during the period of depression.

In America the revival will almost certainly be more pronounced and earlier than with ourselves, but it is very improbable that the revivification of the trade there will largely benefit ourselves. In the absence of any really radical reduction in the tariff of

been stimulated and sustained, and apparently only by further reductions will it be maintained at even its current volume.

There are certain branches in which even the barest values will not serve to uphold the consumption. Of these the chief is shipbuilding, which is acknowledged to be in a declining condition. Old orders have been, and are being, worked off without other contracts being secured; hence the North of England seems certain to lose a source of trade which has latterly absorbed from 80 to 86 per cent. of its entire make of manufactured iron. It does not follow, of course, that this large business is to fall off entirely and at once, but it appears reasonably certain that much of it is destined to be lost for some time to come. Here, therefore, we have a factor which is bound to have most weighty influences. The North of England is the largest ironmaking district of the whole world. With a decrease of, say, 50 per cent. in the demand for its finished products, its smelters must suffer severely, and, as their pig iron is not sufficiently esteemed for the better sort of foundry or general uses, it is almost certain that the make of pig iron in Cleveland must shortly be greatly curtailed. On the whole, therefore, there seems to be no escape from the conclusion that the make of iron is more than sufficient to supply the demand, and that as a necessary sequence to a further falling off in the consumption of the specialty of the principal ironmaking locality—coupled with a general decrease in the production of steel rails—we shall shortly witness a decided restriction of the production. The only way of avoiding this course of procedure lies in the possibility of an early and appreciable augmentation of the demand. Of that most desirable contingency, however, it cannot be honestly said that there are any reliable or even hopeful symptoms. The whole world is apparently well supplied with iron and steel, and there are no enterprises in hand or in contemplation likely to give rise to an abnormal consumption of either metal. It must be conceded, therefore, that the outlook is anything but brilliant; indeed, it would be no exaggeration to say that the prospect is as devoid of encouraging features as at any time during the past six or seven years.

## Fithian's Engine and Gearing.

We recently had occasion to witness an interesting application of an ingenious multiplying gear invented by Mr. Lemuel S. Fithian, of this city, to the driving of electric-light machinery, and which, in view of its many novel features and apparent advantages, will unquestionably be of no little interest to our readers. Before proceeding to the description of the details of the arrangement, it is proper to state that the success of Mr. Fithian's invention depends mainly upon the use of a comparatively small and light fly-wheel, moving, however, with extremely high speed, the momentum thus attained favoring a remarkably steady and smooth motion. The fact that the fly-wheel is of very light weight is perhaps the most striking peculiarity of the invention, the store of power necessary to overcome small temporary resistances being effected by its velocity instead of, as in ordinary cases, by its weight. When we consider the fact that the mechanical effects produced are in the direct ratio of the mass and of the squares of the velocity, it will readily be seen that, say, by doubling the speed we obtain four times the effect, and, likewise, by increasing the speed three times we obtain nine times the effect. It should be remembered, however, in this connection, that, as Mr. Fithian found in his experiments, there is a limit to the velocity to be gained by the size of any special fly-wheel, since if too large the resistance of the air becomes so great as to counterbalance any further gain. This limit has been determined by the inventor as nearly as possible, and the appliances which he now has in operation are so constructed as to yield the most economical results. Another feature of no little value is the arrangement of cog-wheels of only moderately varying diameters to produce a high velocity, unlike, in this respect, the different speed-multiplying gears which have been brought to public notice in past years.

Figs. 5 and 6 of our annexed engravings readily explain the mechanical details and general assemblage of parts, Fig. 5 being a front and Fig. 6 a top view and longitudinal section.

Referring to these, we would say, by way of explanation, that the letter A designates a shaft which is supported in bearings formed in the standards B B, Fig. 6. Mounted firmly on the shaft is an internally beveled cog-wheel, C, which works with a smaller wheel, D, the latter being placed at an angle, as indicated. It is also arranged independently in fixed bearings formed in a horizontal bar, E, which is supported at right angles to the shaft A on the standards F F, more clearly shown in Fig. 5. This bar is so constructed as to pass around the shaft A, being provided with a bend arranged either above or below it. At the point where the gear-wheel D is fixed, its supporting bar, carried by E, is so shaped as to enable the wheel to mesh with C at a proper inclination. G is a large double gear, which may be of equal diameter with the gear C, and is mounted loosely on the shaft A, being provided with an elongated sleeve or hub, b, by means of which it is steadied. On the hub of this gear-wheel G is a small beveled pinion, b, with which the stationary intermediate gear-

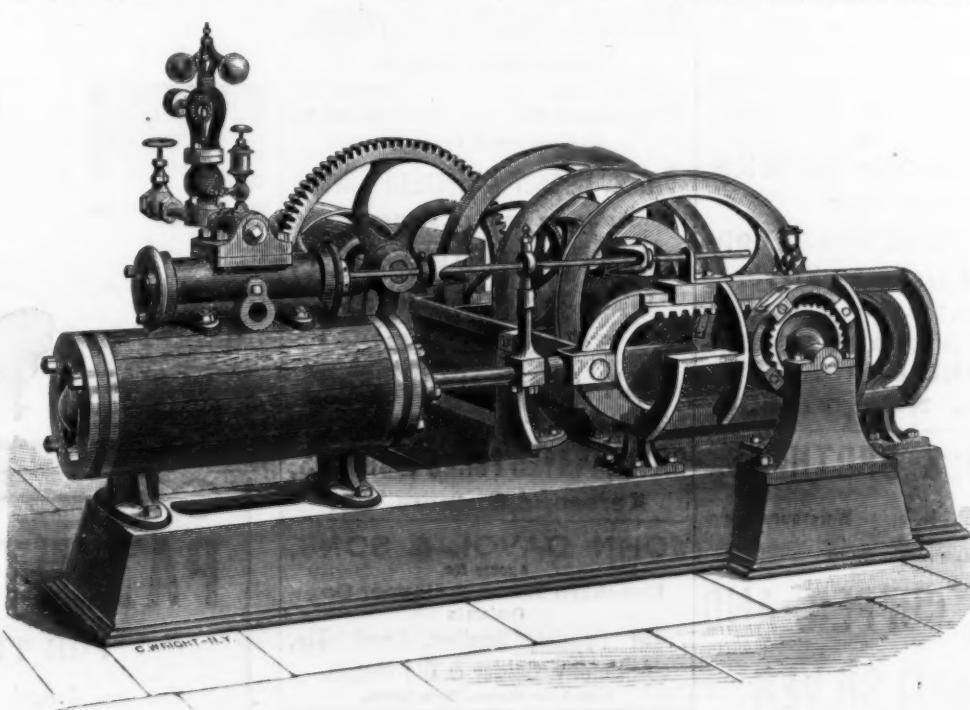


Fig. 1.—Perspective View of Engine and Gearing.

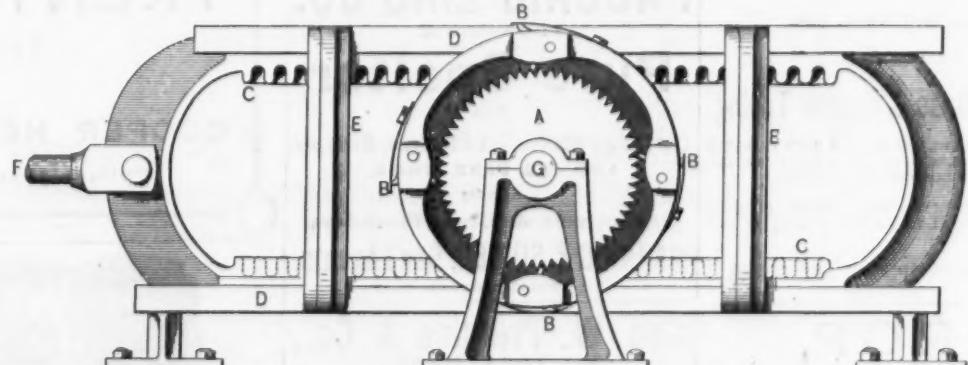


Fig. 4.—Enlarged View of Rack and Dog Disks, Transmitting Power to the Shaft.

## FITHIAN'S ENGINE AND GEARING.

was a small but handsome suit of six rooms for the use of the imperial family. This suit exhibits the broadside of the yacht, with two tiers of deck houses over it. But, besides the hold, the yacht is built with four decks—platform deck, main deck, upper deck and awning deck—crowded with saloons and staterooms, and containing, besides the equipment of a steamer and a palace, novelties which must leave like the impossibilities of fiction and leave the *Livadia* unrivaled. To tread corridors paved with marble and find bulkheads paneled with the most exquisite patterns of tiles hardly lessens the astonishment of discovering that a magnificent marble fountain decorates the Emperor's saloon, and that baths for the imperial family are hewn out of solid blocks of marble. Nothing will better suggest the dimensions of the yacht than to learn that coal bunkers, holding 200 and 300 tons of coal, are filled by means of a railway connecting with various coal shutes. Among other surprises are the engines for the electric lights which illuminate the interior as well as the exterior of the yacht, for the yacht will carry forward a masthead lantern, which is to be an electric light bright enough to get mistaken in the English Channel for the South Foreland under way. The side lights are electric lanterns, which will display to passing vessels an unaccountable brilliancy. These but suggest some of the wonders of the *Livadia*, which must carry to the borders of the Black Sea more startling surprises than she has left behind in the Clyde, for it will hardly be doubted that one purpose

divides selling prices from the actual cost of production. The question, therefore, is whether this bare margin will also be swept away, or whether there are any reasonable grounds for assuming that bottom values have been reached. In discussing this issue and its probabilities we cannot hope to bring forward facts or figures which will be convincing or satisfactory to all our readers, inasmuch as what applies to one works or concern is wide of the mark in another case. What may be usefully and instructively done, however, is to condense into as brief a space as possible a mention of some of the leading factors of the problem under consideration.

To begin with, it is undoubtedly important to consider the mutual relations of supply and demand the world over. On this head there is a consensus of opinion on the part of those who are qualified to express such opinion that the world is at present producing more iron and steel than it is able to use. That being so, how is the surplusage to be disposed of? Heavy stocks lie in various places, and the oversupply is inexorably promoted by the low selling values of the day. Unless a *cartel* to stoppage be adopted at any given work, iron must be produced largely in order to be produced cheaply. Half measures are of no avail whatever in the existing state of the market; hence it is that overproduction has gone on until stocks are almost unmanageable, and prices lower than for many years past. In the United States this dilemma has been recognized and met by the only

the United States, we shall be wise to look upon that market as being almost entirely lost to our ironmasters. Such a tariff revolution is most improbable; therefore prominent men will exclude all American contingencies from their calculations. The next thing is to study the figures relating to the production, consumption, exports and reserve stocks of the year, so soon as these shall be available. At the time of writing these statistics have not been issued, nor will they be published for some little time to come, with the exceptions of the returns of the Scotch, Cleveland and West Coast iron trades. In each of these three districts stocks are now less than was the case a year ago, while the shipments from Scotland and Cleveland are larger. In Scotland the make has been smaller, but in Cleveland larger, while on the West Coast the output has been undergoing diminution for some time past. From other parts of the country we have no reliable statistics and very little information as to the unsold stocks of pig and other iron. On the whole, however, there seems to be some ground for inferring that stocks are not larger than at this date last year; possibly they are a few thousand tons less, bearing in mind the smaller number of blast furnaces at work during the past two or three months. In either event it may be taken for granted that the demand has been readily supplied throughout the year by very little more than three-fourths of the blast furnaces, and without encroaching upon stocks to any material extent. Only by continually drooping prices has the demand

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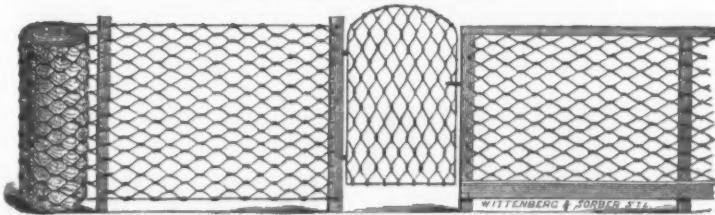
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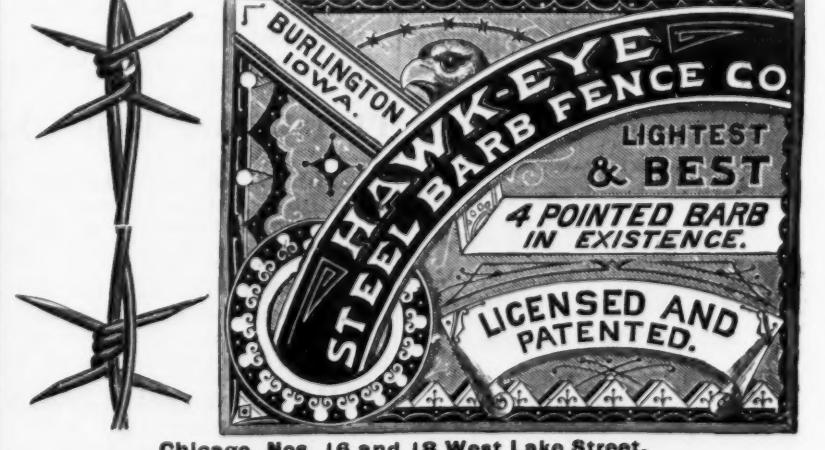
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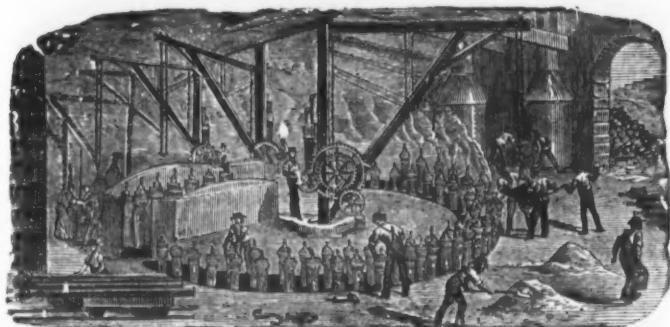
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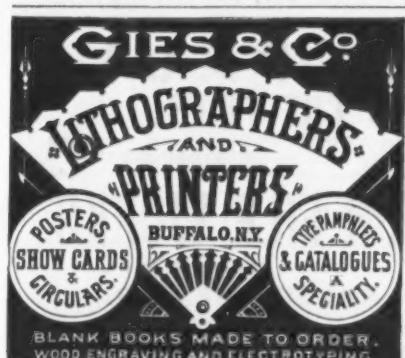
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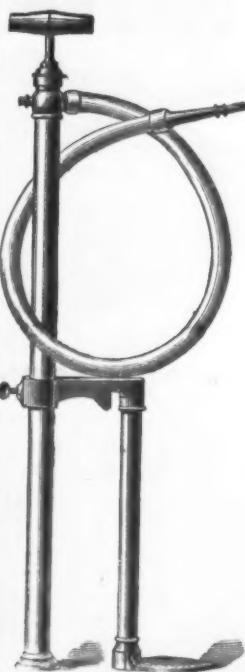
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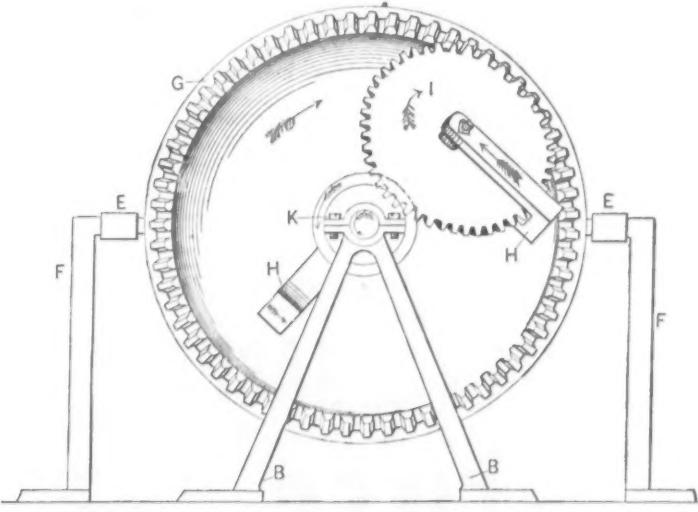
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engine may consequently be started at any point in the stroke. The gear-wheel at the end of the shaft A in one of the engines now working is 12 inches in diameter, gearing with a 24-inch wheel directly attached to the dynamo. Owing to the peculiar method of transmission employed, and the large leverage introduced wherever possible, Mr. Fithian is enabled to run his dynamo, operating some seven arc lights of nominally 2000 candle-power each, with a surprisingly low expenditure of power—so low, in fact, as to give rise to doubt in the minds of many as to the correctness of the figures. Application of the indicator, however, and a careful calculation of the horse-power developed, have fully confirmed the claims made in this direction. The engine measures 6 1/2 x 19 inches, working with about 50 pounds pressure, and makes about 25 double strokes per minute. Both Mr. B. H. Jessup and Mr. R. B. Fithian, president and secretary respectively of the company,

of trade and the reduction of taxation. With so important a concession to make as the right to fish in Canadian waters, the Government can find a solution of the question. President Arthur propounds for the consideration of a Congressional commission in a reciprocity treaty. There are substantial advantages to be gained by both countries in a treaty covering coal, lumber, agricultural products, fish and other articles of natural production, and as the Canadian Parliament has recorded in the statute book its willingness to enter upon negotiations for reciprocity of trade, it remains for the United States to take the initiative, having the assurance that its advances will be favorably entertained.

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Upon the fourth floor of the magnificent Broad Street Station building, on the corner facing Fifteenth and Market streets, says



Fithian's Engine and Gearing.—Fig. 5.—Front View of Gearing

as well as Mr. Lemuel S. Fithian, the inventor of the gear, will be found ready to give all further particulars relative to the engine, and we do not doubt that a visit paid to them will prove both interesting and useful.

## Telephone Statistics.

Recent statistical data as to telephonic communications in the two hemispheres present some decidedly interesting figures. Thus in the United States the different companies have upward of a hundred thousand subscribers among them. Next to the United States comes England, where there are telephonic nets in 47 places; still the number of subscribers does not exceed 4946, of whom there are 1564 in London, 692 in Manchester, 681 in Liverpool, and 600 in Glasgow. In France no more than eight cities have telephonic nets; they have 3640 subscribers among them, of whom there are 2422 in Paris. Berlin, with half the population of Paris, has no more than 581 subscribers, and 10 German cities muster among them on more than 2322. Belgium, which is a very small country, comprises 2322 sub-

scribers, are the quarters occupied by conductors of passenger trains and others employed about the depot when away from home or off duty. Part of this space is taken up by bath and dressing rooms, with numbered closets, in which passenger employees keep their uniforms and other clothing, and part by sleeping rooms. These differ from the resting places at the retreat for brakemen at Fifty-second street in that they are provided with bedding and other accommodations, so that the men who use them can stay all night as comfortably as they could at their own homes. The remaining part of this space is filled by the conductors' library and reading-room. This is larger and finer than the brakemen's, though hardly so well lighted, as it has windows only upon one side. A few glances reveal the fact that it is intended to cater to tastes of a high order, as though the company considered their employees intelligent, cultivated gentlemen, and intended to treat them as such. It is carpeted with a handsome Brussels and provided with a number of chairs, sofas, library and chess tables. The chairs and sofas are neat and substantial, of different patterns, walnut with cane

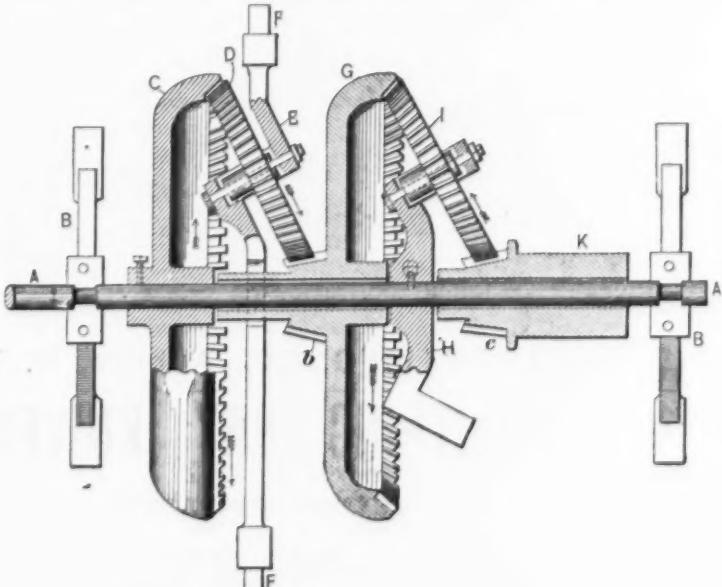


Fig. 6.—Top View and Longitudinal Section of Gearing.

scribers—that is to say, exactly the same number as the German Empire. In the Austro-Hungarian monarchy only Vienna, Pesth and Trieste possess telephones, with respectively 600, 300 and 30 subscribers. Italy is very much further ahead already, since there are 12 places in the peninsula which have telephones, and foot up among them as many as 2522. In Russia telephones have been set up in Moscow, St. Petersburg and Odessa, but in other places also licenses have been given out. Switzerland has telephones at Berne and Zurich, Holland in Amsterdam and Rotterdam, and Denmark in Copenhagen only. In Sweden a concession has only been given for Stockholm, but it is known that telephonic arrangements are being made in other cities as well. In the East Indies there are telephones at Calcutta, Madras and Bombay; in Egypt, at Alexandria and Cairo, and in Mexico in the capital of the Republic.

seats, or upholstered in hair-cloth rep. The library tables are covered with daily papers, magazines, atlases, encyclopedias and handsome pictorial volumes, as "Picturesque America." Chess, checkers and dominoes are the only games allowed. The walls are literally covered with large photographs of Pennsylvania Railroad scenery, portraits of prominent railroad officials and a number of fine engravings. The immense bookcases are filled with a remarkably good collection of several hundred volumes, embracing nearly all of the standard works of English literature. The books are neatly and uniformly covered with heavy, dark paper outside of their bindings. There is a librarian in charge, and all using the reading-room have the privilege of taking the books home. Most of the volumes were provided by the railroad company, but several donations have been made by outside friends. The same is true of some of the pictures. The finest gift was that of a handsome Steinway piano, presented by Mr. Reed, of Philadelphia. A violin keeps the piano company. Some of the conductors are fine musicians and elocutionists. Upon the evening of the 25th of every month they hold in this room an informal concert or entertainment among themselves. The performances are usually by amateurs, drawn from their own ranks, assisted by their lady friends. Occasionally professional talent is enlisted. Conductors and other railroad employees take the greater part of their

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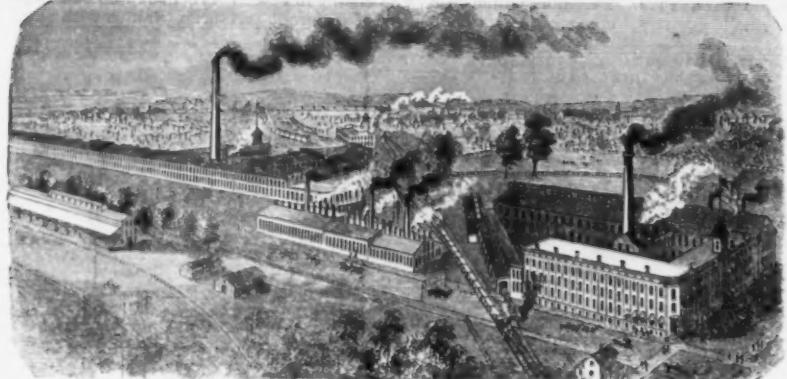
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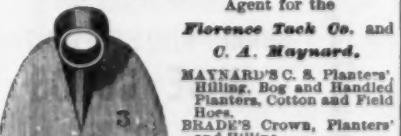
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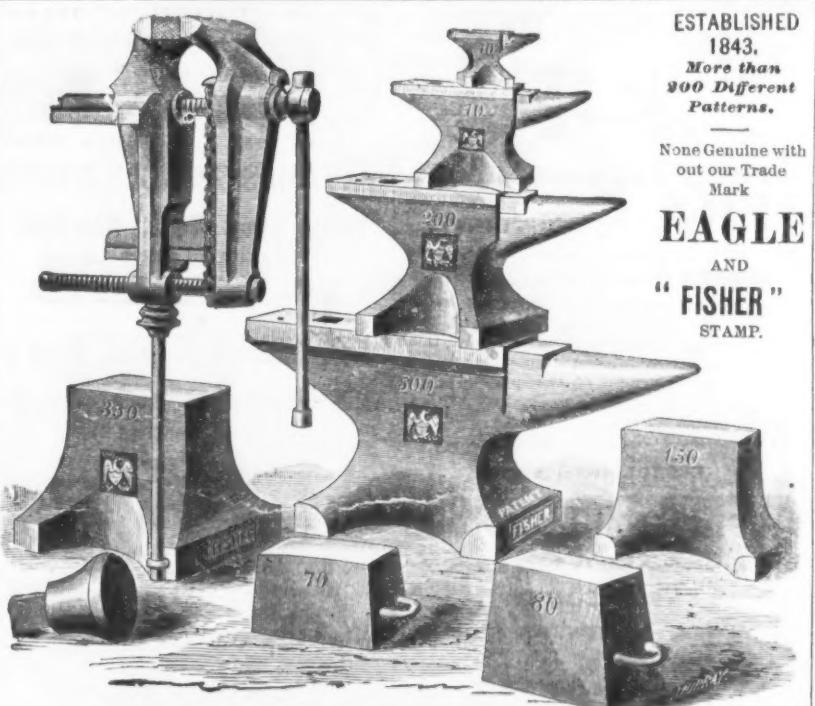
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**LATEST LEGAL DECISIONS.**

CUSTOMS—EXCESSIVE DUTIES—APPEAL TO SECRETARY OF THE TREASURY—LIMITATIONS

A merchant in New York protested against the rate of duties required of him on certain goods he had imported, and duly appealed to the Secretary of the Treasury from the decision of the collector in the summer and fall of 1871. The Secretary made no decision, and in 1879 suit was brought against the collector, who set up the defense that, as the suit had not been brought within six years, it was barred. By the act of Congress it is declared: "No suit shall be maintained in any court for the recovery of any duties alleged to have been erroneously or illegally enacted until the decision of the Secretary of the Treasury shall have been first had upon the appeal, unless the decision of the Secretary shall be delayed more than 90 days from the date of the appeal in case of an entry at any port east of the Rocky Mountains, or more than five months in case of an entry west of those mountains." The collector's counsel argued upon the trial that, though the Secretary had made no decision, the statute of limitations began to run from 90 days from the submission of the appeal to the Secretary. The court gave him judgment on this ground, and the plaintiff carried the case—Armen vs. Murphy—to the Supreme Court of the United States, where the decision was in his favor. Mr. Justice Matthews, in the opinion, said: "There is no language in the act of Congress requiring the conclusion that the importer must sue for the excessive duties paid immediately upon the expiration of 90 days; it is inconsistent with the terms actually employed, and is not founded on any sufficient reason. The right to sue at all before the final decision of the appeal is merely inferred from the form of the exception, and in its nature is permissive, and not peremptory. The prohibition to sue before the decision of the appeal is rendered in express, with the saving only of the right on the part of the claimant to sue before the final decision is rendered, if such decision is delayed for more than 90 days after the date of the appeal. But there is nothing which requires him to sue until after such decision has been rendered. The whole purpose of the saving in his favor evidently is that he shall not be required to wait longer than 90 days after his appeal for an adjudication. There is nothing to forbid his waiting without suit as long as he has reason to expect a favorable decision upon his appeal."

ATTACHMENT—SHARES OF NON-RESIDENT DEBTOR IN FOREIGN CORPORATION.

The stock belonging to a resident of Massachusetts of a debtor in a Pennsylvania corporation was attached in an action by another resident of Massachusetts brought in a New York court, upon the ground that, as the corporation held a place of business in New York, this could be done. In this case—Plympton vs. Bigelow—the Court of Appeals of New York decided against the validity of the attachment. Judge Andrews, in the opinion, said: "The general principle that attachment proceedings can only be effectual against property within the jurisdiction is clearly recognized by the code. The law is well settled that a corporation has its domicile and residence alone in the sovereignty which created it. That it does business in another State and may be tried there for its own obligations does not bring it there for the determination of the rights of third persons."

**John Ericsson.**

Captain Ericsson, says the Boston *Herald*, was only a boy when his father's influence got him a place on the Gothic Canal, where he was placed in charge of a section of the works. He carried on operations in Sweden up to his 23d year, at which time he went to England to extend his field of labor, and he has never since returned to his native country. He was one of the competitors in the exhibition of steam engines in which George Stephenson's famous locomotive, the Rocket, had first prize. Captain Ericsson, with his customary dogmatic force, declares that his engine was quite a novelty, attaining far greater speed at the exhibition than the one that took the prize. That was in 1829, three years after Captain Ericsson first landed on English soil. It was seven years later that he adopted the screw propeller, which made a great but unfavorable sensation in shipping matters all over the world. The English Admiralty are conservative if they are anything. They still retain their old fashion of scouting anything whatever that is new or likely to turn over the old system of shipping. They derided the screw propeller in the most decisive terms, and after Captain Ericsson had vainly tried to secure an admission of the value of his work, his temper got the better of him and he left for America. He was 30 years old when he arrived in this country, and during the next few years of his life he had the satisfaction of seeing his propeller scheme demonstrate its own value in the world's navigation. For a long time Captain Ericsson devoted his mechanical genius solely to the production of vessels of war, to which his attention had been turned by his English training.

One of the curious traits of Mr. Ericsson's character is a total absence of anxiety to personally see the workings of any of his machinery. He has never been on board the Destroyer but once since she was completed, although experiments have been going forward steadily ever since the preparations were complete. In fashioning an invention of this kind Ericsson works almost entirely from drawings, and he knows just as well how every part of the finished machine looks, or should look, as though he had handled it a thousand times. Now, in the last of his long years, he rises from his bed just as regularly at 7 o'clock in the morning as he did when a boy. He takes his cold plunge and follows it with his regular swinging of clubs and dumb-bells, just as he has done for years and years. Then he gets into his old-fashioned starchless shirt, with limp, standing collar, his broadcloth trousers and coat and his buff duck vest. A breakfast, which Hanlan would think a harsh adherence to training rules, follows the operation of dressing. It consists of weak tea, coarse bread and eggs, or some similar dish. After that, hard work until 4 o'clock in the afternoon. Then dinner, largely vegetarian in its direction. From that time until 9 or 10 o'clock at night he sticks closely to his drawing table, outlining curious pieces of machinery for some new development of inventive genius. Here follows the most curious and eccentric part of Mr. Ericsson's routine. Instead of sitting down to rest and think, he puts an old chimney-pot hat upon his head, seizes his cane and goes for a long and circuitous walk, which usually brings him back to his own front door about midnight. Such has been and is the daily life of John Ericsson, mechanical engineer. No cigars or tobacco, no cocktails, no brandy and soda, nothing but exercise, work, midnight prowling, weak tea and a strong temper.

The British Arsenal at Woolwich now contains huge pyramids of spherical shot and shell, which are condemned to the melting furnace for conversion into projectiles more adapted to modern requirements. One heap alone, as described in an English paper, contains about 40,000 of the 13-inch shells which were supplied at the time of the Crimean War, and were the most formidable missiles used in the siege of Sebastopol. The 13-inch mortars from which they were fired have long ago disappeared from use, but he in hundreds in a distant part of the arsenal, waiting orders for their demolition, and no round shot or shell of any size has been made since the introduction of rifled ordnance and elongated projectiles. They are being all gradually broken up. Another ancient description of shell of the class known as smoke balls and ground light balls has been declared obsolete, and all that are remaining in stores will be destroyed. They are of various sizes, varying from 4½ inches to 13 inches in diameter.

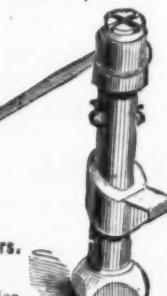
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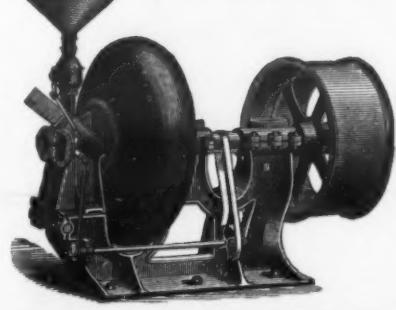
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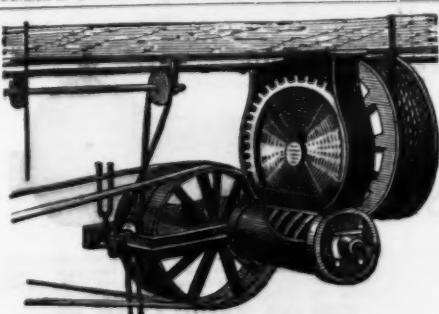
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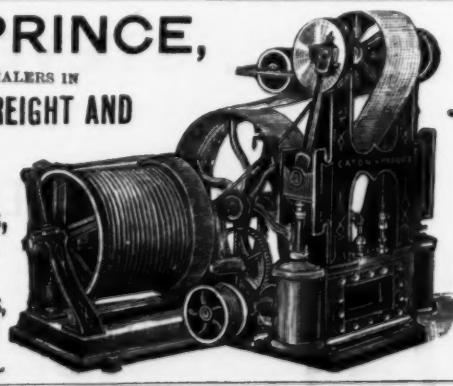
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### METALLURGICAL NOTES.

#### Basic Process at Creusot.

The following facts relative to the basic process as applied to the Bessemer and open-hearth at Creusot appeared originally in *Berg und Hütten Männ. Zeit.*: The basic Bessemer converters are lined with a dolomite containing 53 per cent. of lime, 35.80 of magnesia and 7.70 of silica and alumina. This is heated to redness, quickly pulverized, mixed with 10 to 15 per cent. of tar, and stamped in with heated iron stampers. The tuyeres are made of silicious material. The converter is charged with 16 to 18 per cent. of heated lime and about 1 1/2 per cent. of fluorspar, and is then charged with 8 tons of cast iron taken directly from the blast furnace. After slagging and decarburization, the overblow and recarburization is effected with spiegeleisen containing about 18 per cent. of manganese. The bottom requires repairs after 15 to 20 charges. The sides require renewing after 80 to 100. The cast iron contains carbon, 3; silicon, 1.3; manganese, 1.5 to 2; phosphorus, 2.5 to 3; sulphur, not more than 0.2. The steel produced contains 0.01 to 0.02 of manganese, and 0.03 of sulphur. The slag at the end of the decarburization contains 22 per cent. silica, 12 per cent. phosphoric acid. At the overblow they contain 12 per cent. silica, 16 per cent. phosphoric acid. The steel made by the acid process contains considerable silicon, which is often greater in quantity than the carbon. The quantity of phosphorus, sulphur and silicon is less in the basic steel and the quantity of carbon higher. The quantity of manganese is considerably less. The following is an average analysis of the steel:

	Basic.	Acid.
Carbon	.45	.40
Silicon	Trace	.08
Phosphorus	.06	.075
Sulphur	.029	.040
Manganese	.76	.66
Tensile strain per square mm.	72 kg.	73.2 kg.
Percentage of stretch	.16.1	.17.2

In the open-hearth process at Creusot the hearth is made of the same dolomite as the lining of the converter. The arch is made of silica brick, which is separated from the basic material by a layer of bauxite. The charge of cast iron containing phosphorus is mixed with wrought iron, which is added little by little. Three to four additions of lime are made and the slag withdrawn from time to time. As soon as a breaking test shows the dephosphorization finished, the recarburation with spiegel begins. The comparison of this work with that of the converter shows that the introduction and repairs to the basic lining are easier in the furnace; that, as the highest temperature is arrived at immediately after the combustion of the carbon and silicon, no attention need be paid to the other foreign constituents in the iron. The slags can be easily withdrawn from the furnace, while in the converter, to effect it, the slags must be very fluid. The dephosphorization commences at once, and there is no fear that after the addition of the spiegel a reduction of the phosphoric acid will take place. As the process takes a longer time, the mechanical tests can be more carefully made. An open-hearth steel of this kind contains:

Carbon	0.16	Phosphorus	0.08
Silicon	Trace	Manganese	0.25
Sulphur	0.03		

The steels are better and more uniform in quality than those made in the converter, though the physical and mechanical tests give practically the same results in samples from both methods. In order to prevent blowholes, the temperature is raised at the time of casting.

#### Action of Phosphorus in the Blast Furnace.

A late issue of the *Ironmonger* gives the following translation of a paper on "The Action of Phosphorus in the Blast Furnace," read by Director G. Hilgenstock, of Hörde, at the meeting of the Association of German Ironmasters held at Düsseldorf on December 9: There are, said the author, certain quantities of phosphorus which, though originally to be found in the ores that find their way into the blast furnace, cannot be traced in the pig iron. The question is, What becomes of the mysterious phosphorus? It is obvious that it must either get into the slag, or disappear with the gases escaping from the furnace, or mingle with both. In order to sift the matter it becomes desirable to ascertain the exact proportion of phosphorus to be found in Thomas pig. A month's experiments have shown that fully 30 per cent. of the original quantity of phosphorus was to be traced neither in the pig nor in the slag, and it must, consequently, have escaped in a volatilized condition along with the remaining gases coming from the furnace; or, in other words, assuming that there were at first three parts of phosphorus in the ore, and one-third of it is volatilized,  $\frac{1}{3}$  kg. = 1.1 pound of phosphorus, would escape every minute if the output be 72 tons per day. The author of the paper cited the results of a series of experiments on the subject, and quoted one fact which seemed to favor the theory of the volatilization of part of the phosphorus. A small particle of consolidated gas contained (a), prior to ignition, .53 per cent. of P and 18.17 per cent. of  $\text{SiO}_2$ ; the same (b), subsequent to ignition, P = 1.20 per cent.,  $\text{SiO}_2$  = 24.39 per cent., and, assuming the proportion of silicious acid to remain constant, 100 parts of  $\text{SiO}_2$  would contain an accession of 2.01 parts of phosphorus subsequent to ignition. However, no result at all equal to this was obtained in other experiments. The following are the data obtained in other experiments, the proportion of phosphorus to 100 parts of iron being:

	(1)	(2)	(3)	(4)
	3.285 P.	3.285 P.	3.25 P.	3.25
- P in slag	.940	.070	.33	.225
Difference	2.345	2.165	2.92	2.025

Actually traced 2.76

2.74

8.18

3.41

The discrepancies in these figures go to show that when an escape of phosphorus is suspected after going through the calculation, some mistake must have been made in the calculation.

By this and other considerations the author was led to the opposite theory to the one he had at first advocated—that is to say, that phosphorus is volatilized in no perceptible proportion in the gases escaping from the blast furnaces, and this view, Herr Hilgenstock says, has been corroborated by the results of many experiments whatever Professor Jinkener may say to the contrary. As regards the proportion of phosphorus to be found in the molten metal and the scoria, the figures obtained in a series of seven experiments are worth reproducing. They are as follows:

	In the pig.		In the slag.		
No.	Sl.	P.	Mn.	C.	P.
1	trace	5.96	.92	.48	2.57
2	trace	4.29	.86	1.11	2.39
3	trace	4.24	.51	1.05	1.74
4	.06	6.07	.77	1.19	1.92
5	.09	4.57	1.08	.90	2.6*
6	.28	8.61	1.09	1.19	1.18
7	.28	3.79	1.13	1.12	1.19

\* The charge containing less phosphorus.

This shows that, as the proportion of P in the charge increases, a corresponding increase takes place in the slag. In all the seven experiments referred to the iron had been produced by rather a large charge of coke, and from the comparatively small proportion of silicon and carbon the author is led to believe that phosphorus in pig slags plants in a great measure both these elements. He was confirmed in this theory by the results of a large series of experiments made by him at Hörde, and illustrated in a series of diagrams produced by him. The maxima and minima of the tabulated results are as follows:

$$P = 3.26 \quad Si = 1.03 \quad C = 2.01$$

$$P = 12.12 \quad Si = .02 \quad C = .87$$

This shows that the same phenomena are at work in the process of reduction in the blast furnace as in the basic process of oxidation. As far back as 20 years ago Dr. Wedding remarked that silicon elbows carbon out of pig, and now it becomes clear that both of these are in their turn hustled out by phosphorus. Further experiments and calculations make it plain that, in proportion as the quantity of phosphorus increases in the charge, the quantity of phosphoric acid in the scoria is augmented. Again, as the quantity of fuel—or, in other words, the temperature—increases within the blast furnace, the proportion of phosphorus and that of silicon increases in the pig put out. Thus, when there was as much as 14.36 per cent. of phosphorus in the pig there still remained room for .98 per cent. of silicon. The author of the paper likewise found that in proportion as the quantity of silicious acid increases in the slag the quantity of phosphoric acid contained therein decreases. On the other hand, phosphorus seemed to have an unlimited power of alloying itself with iron, almost as unlimited as manganese. One sample produced contained as high a figure as 25.65 per cent. of phosphorus. The following is a summary of the results obtained by Herr Hilgenstock:

1. Of the phosphoric acid entering the blast furnace no traceable quantity is volatilized.

2. Sometimes a large proportion of the oxalic acid in the furnace cannot be reduced, and makes its reappearance in the slag; this occurs to a larger extent:

(a) The smaller the means of reduction—i. e., the quantity of fuel in the furnace; in other words, the lower the temperature.

(b) *Ceteris paribus*, the larger the proportion of phosphoric acid within the charge.

3. The more phosphorus that enters the slag the smaller are, *ceteris paribus*, the proportions of silicon and carbon, without the faculty possessed by iron of commingling with silicon and carbon being reduced in proportion.

4. When the charge contains plenty of phosphoric acid, the quantity of phosphoric acid contained in the slag decreases in proportion as the quantity of silicious acid increases.

5. Carbon alone works directly or indirectly as a vehicle of reduction of the phosphoric acid that enters the blast furnace.

#### The Warwick Furnace Record.

The Warwick Furnace, at Pottstown, Pa., 15 1/2 x 55 foot, made in the third year of its present blast 21,676 tons (2260 pounds) of pig iron, 94.76 per cent. being No. 1 and No. 2 foundry and No. 3 mill, 2.27 per cent. mottled, and 2.95 per cent. white. Fuel consumed per ton of iron, 1.2875 tons, flux consumed per ton of iron, 0.875 tons. The ore averaged 50.2 per cent. Average temperature of blast, 860° F. During the year the furnace was idle one week, 3 1/2 consecutive days the first six months and 3 1/2 days the second, to clean boilers. The other stoppages averaged five hours per week. The fuel used was three-quarters anthracite coal and one-quarter coke. Mr. Edgar S. Cook, the efficient manager, seems determined to have Warwick Furnace improve on former records, and wakes up some of the furnaces which, with richer ores and fire-brick stoves, should excel his work. An average of 425 tons per week, with 50 per cent. ores in a 15 1/2 x 55 foot furnace, and a temperature of blast below

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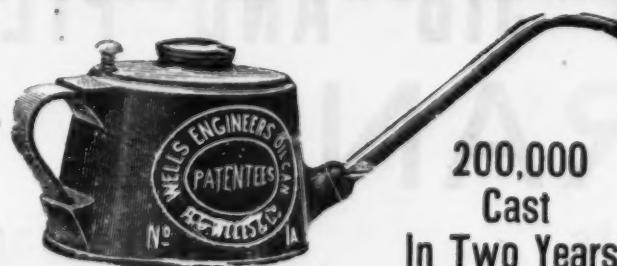
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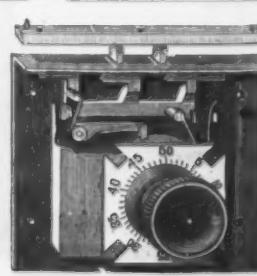
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#### Armor Plates.

An improvement in armor plates recently patented in England consists in making the main body of the plate of mild steel, cast to the shape and curve required, the surface of which is more or less covered with chilled iron pieces or studs of varying shapes and dimensions; these chilled pieces by their harder surface being presented to the projectiles, tend to break them up, and further have the effect of diminishing the extent of the stalling to which steel plates are liable when struck by a projectile. In cases where the armor plates are to be fixed above the water line in vessels, or wherever the uneven surface would not tend to diminish the speed of vessels, the resistance of the plates to penetration may be further increased by causing the chilled-iron studs to project beyond the surface of the plates for the purpose of deflecting the projectile. In order to carry out this invention a steel plate with suitable recesses is cast, and after its removal from the mold, iron chills are fitted over the recesses, which are then filled up by a suitable mixture of cast iron being poured in; this is chilled by the plate under it and by the superimposed chills, the whole being then annealed in an ordinary annealing furnace.

#### The Manufacture of Catalan Iron in France.

This industry, which barely 25 years ago was of considerable importance in the Ariège district, is still carried on, says *Le Fer*, in all its primitive style, with more or less prospect of continued vitality. The workers engaged in it receive about the same wages as those paid in other industrial occupations in that locality. The price of the Catalan iron is not, as a rule, higher than that of the wrought iron now generally used, and is often less. It is only exceptionally used for general work, because it cannot be obtained in the various exact dimensions of rolled bars, and also on account of its hard, steel-like nature, which makes it more difficult to manipulate in working. A large amount is made into bars, suitable for farmers' work, which sell for something like 31 francs to 32 francs per 100 kg. (\$6 to \$6 per ton). Many rough agricultural tools, as plowshares, coulters, mold boards, &c., are made directly from the bloom as it comes from the forge. These parts, being shaped under the large hammer, are naturally not always so well finished as those made under the small tilt-hammer from modern rolled merchant iron, but they are mostly of a presentable shape and find a ready market, as many are convinced that the metal, as it has special properties, must also be possessed of particular virtues. It certainly wears better, on account of its hardness, than the ordinary forgings, and is sold somewhat cheaper—33 francs to 35 francs per 100 kg. (\$6.4 to \$6.6 per ton). Flat bars of about 1 m. find a ready market as raw material for crucible steel. Many manufacturers who are renowned for their superior product do not hesitate to introduce in their mixtures large quantities of it. The price is the same as that of bar iron, viz., 32 francs to 33 francs. Makers of scythes, in particular, who usually melt their own material, consume considerable quantities.

#### The Metals of Antiquity.

Much interest has always been attached to the early history of metals, not only with reference to the date of their discovery, but to the different methods of their manufacture. As throwing some light on this subject, we extract a few items from a paper by Mr. Alfred Tylor, recently printed in a London paper, which discussed the relative dates of discovery of iron, tin and copper. With regard to the metals alluded to, he assigns priority of invention as follows: (1) iron, (2) copper, (3) tin. In support of this contention he argues that the Romans invaded Britain purposely to obtain its metals, then worked extensively there. He finds the Cornish district, or Land's End, described by Ptolemy, the geographer, in the second century, as "Belerium"—that is, the land of mines, "bal" being Cornish for mine. The word is also met with in Irish. In the same manner the skin boats used by the Cornishmen, which so much astonished the Greek travelers, were described by the Greeks under the name of "coracles," evidently a Celtic word from the Celtic root "cren," or "creon," skin. So tin, he thinks, is derived from the Irish word "teine," Welsh "tan," teine probably also expressing brightness. Even in the Malay Peninsula, in the East Indies, a word of similar sound, "timah," still stands for "tin," and not the Greek term for that metal, "kassiteros." Then the Cornish term "iarnan" for iron, is similar to English "iron," German "eisen," Welsh "haearn," Greek "seideiron," in which ei is the important syllable. The Latin word "ferrum" is probably a form of "ierrum," and the Sanskrit "ayas" is for iron, metal. Nearly the same word for iron is, therefore, used in all the Aryan languages, while "es," or "kalkos," stands for bronze or copper and has only a comparatively local extension. The wide spread of the name for iron, or ei, is important, as it points to iron being the metal made before the division of the Aryan race, and, therefore, before copper or tin. There is another, and, he believes, a new, argument. The most easy process of copper smelting, which even now is largely used, may have been the only plan known in prehistoric times. To use this process it was necessary to provide iron to precipitate copper from solution. At the present time 6000 tons of iron are sent annually to the Rio Tinto mines in Spain from Great Britain in order to precipitate the copper from solution. It is possible that the discovery of the art of producing crude iron, which would be useful for precipitating copper, may have preceded the invention of bronze, and yet the art of forging difficult pieces may have been a later invention than that of casting bronze cells in metal molds. Iron, if not steel, appears to have been made in Egypt, both in hearths and in crucibles, certainly before 3124 B. C., but bronze was more used in Greece up to 650 B. C. than iron. As iron was made by a simple welding or forging process, its production appears to be a more ancient art than bronze casting, which required large crucibles and mixing

The following erroneous item inadvertently found its way into our "Industrial Items" a week ago: "The Chancellor of Trenton, N. J., last week granted an interlocutory injunction restraining the New Jersey Zinc and Iron Company from further working the mining property in Sussex County, ownership of which is claimed by Charles W. Trotter and others. The case has been before the courts for several years, and the property involved is valued at several millions." The statement is the exact reverse of the truth. The injunction was in favor of the New Jersey Zinc and Iron Company, and against Mr. Trotter.

The advanced sheets of Superintendent Maxwell's annual report to the Cincinnati Chamber of Commerce show that the business in grain in Cincinnati has fallen off the past year. The aggregate receipts of all kinds of grain have fallen off 4,300,000 bushels, and the shipments have fallen off nearly as much. The reduction is mainly in wheat and corn.

in exact proportions with tin, a process more difficult than in the infancy of metallurgy was likely to be invented. Then one ore of iron, ochre, was the first metallic ore collected, long before the discovery of any of the metal. Accident in the fire might have thus led to the discovery of metallic iron in very early times. Such particles of iron placed in a certain stream in the island of Anglesea (an early peopled district) would precipitate the copper in that stream in a state of pure copper, ready to mix with tin to make bronze.

**Company Stores Given Up.**—In accordance with an order issued by President Gowen some time ago, the store system under the Philadelphia and Reading Railroad was abolished on the 31st ult. This will create quite a revolution in the trade of Wilkesbarre and other towns, as it is expected that those who have heretofore traded with the company stores will now bring their goods of merchants. For years past the merchants have protested against the "company stores," claiming that it was both injurious to the trader and to all legitimate trade. It was agreed by them that the miner was compelled to deal at the company store from fear of getting into trouble with his superiors, and that the company therefore took advantage of him, and charged him more than a regular dealer would. On the other hand, it was claimed by the proprietors of the company stores, who really merely acted as agents for the mine operators, that they were benefactors to the miner and his family, inasmuch as they gave him credit when he could not get it of a city merchant. The managers also claimed that they dealt fairly with the miner, and never overcharged him. Some of them now claim that the payment of money to the men, and allowing them to deal wherever they please, will only bring poverty to the homes of many. The dealers assert that many miners are unable to take care of their money, and, as a consequence, the first pay they get will be spent furiously, and not in purchasing the necessities of life for their families. Their cash all gone, they will have no credit at the "city" store, and, as a natural result, much suffering will entail. Under the company system groceries could be purchased at the store throughout the month, and on pay day the whole amount was deducted from the laborers' wages. The working of the new system is awaited with much interest.

**Change in Postal Rates.**—The Postmaster-General has issued an order changing the rate of postage on a number of articles that have heretofore been rated as third-class or printed matter, paying postage at the rate of 1 cent for every 2 ounces. Under this order these articles will hereafter be classified as merchandise or fourth-class matter, upon which the postage is 1 cent per ounce. The following is the text of the order: "The character of paper as an article of merchandise, within the meaning of the postal laws, is not necessarily changed by the printing or stamping thereon of words, letters, characters, figures, images or any combination thereof. Labels, patterns, photographs, playing cards, visiting cards, address tags, paper sacks, wrapping paper with printed advertisements thereon, bill heads, letter heads, envelopes, and other printed matter of the same general character, the printing upon which is not designed to instruct, amuse, cultivate the mind or taste, or impart general information, are mere articles of merchandise, and should be rated as fourth-class matter."

**The Atchafalaya Bridge Opened.**—The first train crossed the Atchafalaya Bridge on Dec. 26th, and trains are now passing over it regularly. Work was commenced on the bridge, which is situated 130 miles west of New Orleans, in September, 1881. Since June, 1883, a day and night force have been constantly employed. The bridge is 1045 feet long, and consists of two fixed spans, each 253 feet long, one fixed span 163 feet long, a draw span 303 feet long, and 73 feet of trestle approaches. The spans are of iron, of the Pratt pattern, and the piers are wrought and cast iron cylinders filled with concrete. The foundations are in no instance less than 120 feet below high water, and are from 75 to 115 feet below low ground. Serious delays in both freight and passenger traffic on the Texas Pacific will now be avoided.

The statistics of plans and costs for new buildings in New York filed during 1883 show a slight decrease from those for 1882. For the first three months of the year 690 plans were filed, representing proposed improvements the aggregate cost of which is placed at \$12,754,420; for the second quarter 914 plans were filed, representing \$14,159,464, and for the third quarter the number of plans filed was 664, which represents \$14,159,467. For the months of October and November plans representing about \$6,534,000 were filed. The total number of plans filed for all classes of buildings in 1882 was 2577, representing a total for new buildings of \$44,763,183.

The following erroneous item inadvertently found its way into our "Industrial Items" a week ago: "The Chancellor of Trenton, N. J., last week granted an interlocutory injunction restraining the New Jersey Zinc and Iron Company from further working the mining property in Sussex County, ownership of which is claimed by Charles W. Trotter and others. The case has been before the courts for several years, and the property involved is valued at several millions." The statement is the exact reverse of the truth. The injunction was in favor of the New Jersey Zinc and Iron Company, and against Mr. Trotter.

The advanced sheets of Superintendent Maxwell's annual report to the Cincinnati Chamber of Commerce show that the business in grain in Cincinnati has fallen off the past year. The aggregate receipts of all kinds of grain have fallen off 4,300,000 bushels, and the shipments have fallen off nearly as much. The reduction is mainly in wheat and corn.

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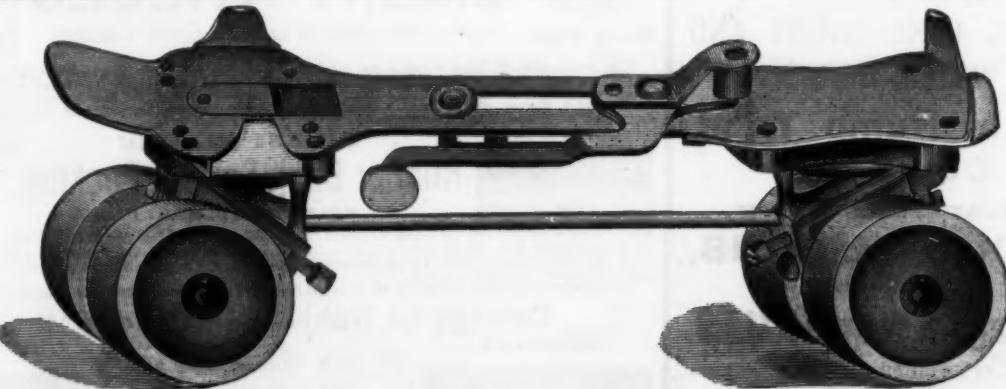
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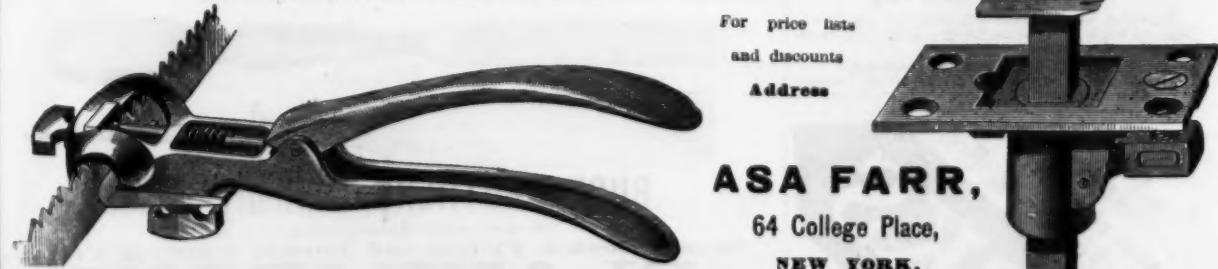


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## New Calendars.

The present is the season in which calendars are put out by such houses as employ this means of advertising, and for keeping their names prominently before their customers. The annual crop of efforts of this character is very large. Among those that are conspicuous for their excellence may be mentioned one issued by Messrs. Bruce & Cook, Nos. 186 to 190 Water street, and 248 and 250 Pearl street, New York. The calendar in its general appearance is almost identical with that which this house has issued for several years past. The New Year's greeting which accompanies this calendar is as follows:

"HAPPY NEW YEAR."—1884.

DEAR SIRS: We present ourselves and our calendar with best wishes for your welfare in the new year. Like our calendar, we would be the familiar face unchanged save in such adaptations to the new order of things as will fit us for greater usefulness in your service.

Our house is growing old. Founded in 1819 by the father of the present head of the firm, it was known as John M. Bruce. In 1840 this son was taken in, and the firm of John M. Bruce & Son was organized. In 1844 other sons came in, and John M. Bruce & Sons became the style. In 1850, the senior Bruce retired, and the firm became John M. Bruce's Sons until 1853, when the present firm of Bruce & Cook was organized. This record covers 65 years; but the present firm names on the calendar show that we may fairly claim to have old heads on young shoulders, and we hold them all to their efforts for the welfare of our customers.

The business of the year past has been peculiar, in that while crops have been good and every branch of demand for consumption active, the markets everywhere are oversupplied with material, and the keen competition occasioned thereby has steadily depressed prices; but few branches of production or distribution have been largely remunerative. In our own specialties we find that in

**Sheet Iron**—The mills are producing more than a supply for the normal requirements of the country, and the product steadily yields in price.

**Copper**.—The mines of the country produce more than we can consume, and the surplus hangs heavily on the market; manufactured copper holds its own better; this is owing, however, to the limited output of the mills, which make only what is consumed.

**Lead**.—Notwithstanding the enormous increase of the consumption of this metal, the production of the mines has more than met the demand, and the price has fallen steadily.

**Spelter and Sheet Zinc**.—In both these our own country produces all we need, and but for the drawback allowed the manufacturers using foreign material for export, it is not likely that lead, spelter or sheet zinc would be imported to any appreciable extent.

**Tin Plates**.—There is probably no product of the world's industry in which the introduction of scientific methods has wrought more beneficially than in this article; the "soft-steel" body and the splendid coating of a good tin plate of the present day give an article of superior utility to the old plate at a far less price. We find very few calling for the "old styles" who would be willing to pay the old price of \$8 or \$9 for I.C. and \$10.50 or \$11.50 for I.X. The fact is that the texture of a good steel plate of the present day is far better than the best of the old plates, and an equal amount of tin, laid evenly over the whole surface, is better than the "dip-candle" process of the old style. It is this heavy coating that costs, and cannot be had among the cheap things even now. We keep in stock the "extra-coated old process" for those who still prefer them, but our own faith hangs on the "extra-coated new process" for the most enduring service.

Prices throughout the year have been remarkably steady; the large consumption has not led to any advance, nor the increase in import materially cheapened the plate.

**Pig Tin** is also depressed, and the surplus stock has forced prices below any figures named since 1880.

**Mixed Metals** are correspondingly low in price; we manufacture these ourselves, and commend to you confidently our own brands of solder, Babbitt metal, &c., for reliable quality and substantial service.

We look upon the general condition of the trade as a healthy one; the process of liquidation and lower prices, without panic or general disturbance, is favorable, and the outlook for the new year exceptionally good. We expect a larger and more profitable business in 1884, and ask for a continuance of your kind patronage to enable us to realize it. We know we cannot prosper unless our customers do, and we look for our profit as well as our own to come to us for your supplies. Yours truly, BRUCE & COOK.

New York, January 1, 1884.

Messrs. Merchant & Co., of 525 Arch street and 520 Cherry street, Philadelphia, and corner of Cliff and Beckman streets, New York, send us a calendar printed by Marcus Ward & Co., showing more that is typical and emblematic of the business in which this firm are engaged than is often successfully combined in an effort of this character.

Much that is represented on the card, which measures 10 x 14 inches, corresponding to a common size of tin plate, is realistic in character, and yet the various parts have been so combined as to form a color effect that is quite artistic. The background of the picture is a light olive-green, against which is sharply contrasted a framework made up of representations of copper or brass tubing. The title, "Merchant & Co.", is worked across the top in grotesque block letters, which are so shaded as to appear in relief, and which, unlike letters in many such legends, are easily read. Hanging in the form of a shield suspended from either end of the name are the addresses above given in Philadelphia and New York. The background of this part of the picture inside of the tubing which serves as a frame is of a bluish cast, worked with scroll designs and fret panels, so as to break up the monotony of color, and con-

trasts happily with the various portions of the design which appear over it. The center of the card represents a forge scene. The smith stands before his anvil with his back to the observer. A helper stands facing him, with his sledge upraised, while an apprentice at the left stands holding the end of the bar being forged. In the center of the background the eye looks out of the shop on the fields and woodland beyond, while the ruddy glow of the forge fire at the right illuminates the faces of the figures and contrasts pleasantly with the dark shadows of the roof and floor of the shop. Immediately below this shop view, and occupying about the same space as is devoted to it, a neat and unobtrusive calendar is printed, while at the right and left, grouped in a manner to effectively display the names printed upon them, and yet in a way in which the materials themselves could hardly be made to stand, are shown bundles of sheet brass and copper, and also drawn copper and brass tubing, sheet lead, boxes of tin plate, lead pipe and bundles of brass and wire. In the representation of all these items the artist has endeavored to give them their real colors, thus further enhancing the color effect of the design. A pig of tin and ingot of copper, together with a keg of solder or Babbitt metal, form an appropriate base to the general design which appears above them. Messrs. Merchant & Co. are to be congratulated upon the possession of one of the handsomest trade calendars of the year.

## The French Merchant Marine.

The official statistics of the French Ministry of Commerce afford indisputable proof of the growth of the French mercantile marine, although numerically, comparing the number of vessels afloat now and at former periods, of all classes, there is an apparent decadence. The latter fact is explained by the partial disappearance of small sailing craft and the substitution of steamships of large capacity. It is shown in the course of two years, 1877-78, the number of steamships increased from 500 to nearly 600, and that there are now 735, while the aggregate tonnage of this class has risen to about 312,000 tons, or about doubled. The concentration of tonnage at a few of the principal seaports is also noticeable, as Marseilles, Bordeaux and Havre control not far from one-half of the entire merchant navy of the country. The total registered tonnage is now 914,000 tons, against upward of 1,000,000 tons possessed by the country ten years ago. Calculating that one steamship will, within a given period, do the work of three sailing vessels of equal capacity, the decrease is apparent rather than real. In the face of the perhaps unexampled depression in ocean freights the world over, it now becomes important to ascertain whether all this tonnage can be profitably employed. May it not prove that, after all, the proud corporations now dispatching lines of first-class steamers to remote parts of the world are dependent, even for existence, on the liberal amounts disbursed in their behalf from the national treasury? Admitting that this may be so, it still remains to be seen whether the incidental benefits derived by the country at large from the extension of its foreign trade through rapid steamship communication do not far transcend in value all their cost. These are subjects which our Congress, now in session, has reason to gravely consider in their various bearings upon the present deplorable state of the American ocean marine.

## The Tariff Question in Massachusetts.

—The annual dinner of the Boston Merchants' Association occurred at Boston, January 3, at the Hotel Vendome, and was a notable event. There were present a large number of the "solid men of Boston," and representatives from nearly every branch of New England commerce.

The discussion which followed the post-prandial exercises was confined mainly to the question of a national bankruptcy law and the tariff.

The principal speech of the evening was made by Senator Hoar. He expressed himself as strongly in favor of a national bankruptcy act based upon the Lowell bill, and he was warmly applauded. Senator Aldrich, of Rhode Island, also ably discussed the same point in the same general manner.

On the question of a bankruptcy law there was no opposition of opinion as to its desirability in the expressions of Congressmen Ranney, Morse, Collins and Russell; but Messrs. Ranney and Morse differed widely in regard to the possibility of its enactment.

Mr. Ranney believes that it will become a party question, while Mr. Morse was equally certain that it will not be so treated. In regard to the tariff, Mr. Ranney and Mr. Russell were opposed to any change, but Messrs. Morse and Collins and J. W. Candler agreed that there should be an immediate reduction of duties if the manufacturers of New England are to be maintained. There seemed to be among those present a preponderance of feeling that some important changes should be made.

Our advices from Sheffield, the great center of the cutlery trade, are to the effect that business was very dull for the closing months of the year. The extreme dullness of the American demand, we are told, has much to do with the general quietude. Business with France is also dull. The threatened war with China is not only paralyzing business in France itself, but is also restricting trade with China and Eastern markets, while the political disquiet arising from this and other causes injuriously affects business in the Continental markets generally.

The statistics of the East River Bridge show that up to the close of November 4, 250,000 foot passengers had paid \$42,500 to cross the bridge. During the same time the amount collected for vehicles crossing the bridge was \$42,158. The total number of passengers who traveled over the bridge in the cars from the opening of the railroad until the end of November was 1,082,300, and the amount collected for fares was \$54,115.

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## Labor Legislation.

The present Congress appears to understand the need of more detailed information regarding the condition and prospects of labor in this country than has heretofore been available. Some admirable work has been done in gathering this information in several of the States, notably in Massachusetts, New Jersey, Pennsylvania and Ohio. That the work of the bureaus of labor statistics in Indiana, Illinois, Missouri and Michigan has not become as well known as that of the States previously mentioned is due to the fact that they are of more recent organization. But the information gathered by these bureaus has, with very rare exceptions, related only to labor in the State making the report, and has in most cases at best been but fragmentary, even in its statements regarding the State labor. The only attempt made by the National Government on anything like a broad scale to collect statistics of wages and to gather information regarding labor is that of Mr. Joseph D. Weeks, as special agent of the Census Department, but this report, though it has been finished for several months, is not even in type yet, we believe, and consequently the information contained in it is not available.

The proposal to establish a national Bureau or Department of Labor Statistics we regard as of the utmost importance. So much of our legislation affects labor and its rewards, and consequently determines its condition, that it is of the greatest consequence that an attempt should be made to collect the information necessary to intelligent action, and without which any action can at the best be but a groping in the dark. Two years ago, when the tariff question was before Congress, and so many speakers on the subject claimed that it was at bottom a labor question, and that protective tariffs had sensibly affected the rewards of labor in this country, a demand was made on the Treasury Department for information bearing on this subject, and, to the utter surprise of a great many, it was found that no department of our Government was charged, either directly or indirectly, with the investigation of facts connected with this vital matter. There was a Bureau of Statistics in the Treasury Department, which should more properly be named a Bureau of commercial statistics: there was a Department of Agriculture that investigated questions connected with this industry, but no one seemed to be charged to ascertain the

facts that affect in such an important degree the well-being and happiness of the great majority of our people. Not only are the welfare and happiness of the individual involved in these questions, but it is evident to every careful observer that some of the most vital questions connected with the peace and continued prosperity of our country as a political entity depend on the course of our legislation regarding labor or affecting labor, and it must seem the height of folly to a disinterested observer that important action on these subjects should be taken without the most thorough and reliable information upon which to base such action.

It is for these reasons that we favor the establishment of a Bureau of Labor Statistics that we may secure correct information on the topics suggested—information that will not only enable legislation to be undertaken intelligently, but will also, we believe, go far to disabuse the minds of the better and intelligent class of workmen of many of the false and erroneous views that now prevail among them.

## The State of Trade in Great Britain.

The reasons for the present unsettled state of the English trade are complex. The depression of a few years back was mainly caused by the countries which produced the raw materials wishing to develop their own resources more rapidly than was consistent with healthy growth. To this end they borrowed from the rest of the world money which, on account of a succession of poor harvests, they were unable to refund. Consequent upon this failure to meet their liabilities was a reduction of their imports from the manufacturing countries. This so greatly reduced the demand for finished products that the markets rapidly became overstocked. The revival of trade commenced in 1879 and continued until 1881, but from that period up to the present date, the depression has been steadily increasing. From all departments of English trade comes the same complaint—that profits, where not completely annihilated, have been so far reduced as hardly to warrant a continuance of work. The cotton mills have insisted upon a reduction of wages, as they must decrease their expenses or else be forced to close. The unprecedented activity in shipbuilding has also suffered a severe decline, while the iron and steel industries are in the same discouraging condition. Although some of the complaints are undoubtedly exaggerated, it must be admitted that profits have been greatly reduced in the last two years. Notwithstanding all these unpleasant facts, the amount of trade in England remains practically the same. The reports of the railway companies show that traffic has not perceptibly decreased, and, in fact, is as large as it has ever been. Speculation of every description has stopped, capitalists having become very cautious and refusing to invest in anything but the most trustworthy ventures.

The first explanation to account for this general disappointment is found in the number of successive bad harvests by which Europe has been afflicted. The great majority of labor, with the exception of that engaged in the metallurgical industries and a few other trades, is employed in raising or handling the products of the soil and making them suitable to the wants of man. An over-production of these articles is something from which the world at large never suffers, while a very few years of poor harvests, resulting in a reduction of such produce, will immediately affect the whole industrial community. The great risk in all agricultural pursuits, of whatever description, lies in the fact that the amount of outlay in both time and money is continuous, year after year, while the recompense, which is entirely at the mercy of sun and rain, is subject to annual variation. The whole agricultural community, in the event of a bad harvest, not only cannot supply the dependent industries with the raw materials necessary for the carrying on of their work, but the farmers, having made no profit themselves, are not able to buy the manufactured products of the towns. Since the middle of the present century, England or the Continent has not been subject to such agricultural depression as in the last six or seven years. The agricultural classes in Europe greatly outnumber all the other producers taken together, and it is not surprising that when they suffer the whole population are likewise affected, and the loss to which each country is subjected necessarily hurts every other one proportionally. Besides a continuance of poor harvests, Europe has suffered from a prevalence of cattle disease, which, though of not so much moment, is still an important factor as affecting its commercial prosperity.

But though the state of the crops is everywhere conceded to be the chief cause for the present depression in English trade, it is by no means the only one. Protective tariffs, enforced as they are in the United States and on the Continent, undoubtedly have had a very unfavorable effect upon British manufacturers; the result of this policy has been felt more particularly of late as one important State after another has raised its customs duties. The remarkable increase in the production of iron and steel in the United States has withdrawn this country from the number of those receiving their supplies from England. Not only has the United States become independent of the English supply, but also Russia and many other European countries are no longer forced to buy in English markets, their own produc-

tion meeting the demands of home consumption.\* Even some of the colonies of Great Britain which hitherto have allowed the introduction of goods free of duty are now trying the effect of a protective duty, which necessarily decreases the demand for English goods. The Weavers' Committee of Northeast Lancashire recently issued a circular calling attention to the dues imposed by the colonies upon English cotton manufactures, and pointed out how they would seriously affect the export trade of Great Britain.

Nor must the fact be ignored that the once proud pre-eminence of Great Britain in the markets of the non-manufacturing countries of the world is now being disturbed, greatly to her commercial disadvantage and pecuniary loss, by such rivals as Germany and Belgium. No longer do the railway requirements of Italy, Spain, Portugal and other humbler countries turn toward Great Britain as the only source of supply. Germany and Belgium take many contracts in spite of low British prices. German and French hosiery and woolen goods also compete favorably with British goods in neutral markets. A very striking example of how British trade supremacy has been lost is seen in the transfer of the American wire-rod trade from British to German hands. Only a few rods of a special quality are now made throughout Great Britain, rods being imported from Germany even for British home use. The past two or three years have witnessed great changes in this important direction.

While the above mentioned are the principal causes of the present stagnation in English trade, there are various others of a temporary nature, which nevertheless have a serious effect for the time being. Before the recent war in the East a considerable amount of English capital was invested in Egyptian securities. The military operations of England necessitated by the rebellion of Arabi produced the more or less disastrous results in trade which always accompany a war. Furthermore, the decline in Egyptian stocks seriously affected the English inventors, causing considerable losses, which the present trouble in the Sudan will not tend to diminish. In consequence of these and other events, there has been a complete collapse of speculation throughout Europe, which means that it is next to impossible to obtain money for commercial enterprises, everybody looking with distrust upon new proposals. Trade is checked and capitalists are holding their capital in such a way that they can apply it at a moment's notice. As soon as this excessively conservative feeling passes away speculation will again become active. The state of trade, being dependent as it is in England and in other countries upon the harvests, will not, however, become materially better until the seasons are once more favorable.

Americans cannot help observing the almost identical condition of trade on both sides of the Atlantic. The depression here is not only severe, but general in its character, the few branches of business which for a long time preserved a distinctive vitality having gradually succumbed under the corrosive influence of excessive conservatism among consumers. There is this difference, however, between the situation in Great Britain and in America—there the outlook is gloomy and less hopeful than ever, while here confidence seems to be returning and the skies are brighter.

## Our Foreign Metal Trade.

We have received from Hon. Joseph Nimmer, Jr., the October statement of the Bureau of Statistics, showing the imports and exports of metals for the month and ten months ended October 31. These monthly statements are much more valuable than they were formerly, owing to the greater detail in which the statistics are given. It will take several months, however, to get them in complete shape for comparison, as the details for last year are not always available. There is much satisfaction to be obtained, nevertheless, from the specific information now given concerning the leading items which figure in our imports of iron and steel. Iron ore, cotton-ties, wire rods, scrap steel and some other articles are now separately stated, and those interested in these lines of trade can ascertain from month to month how much is being imported. The same improvements have been made in the arrangement of the export tables.

We have endeavored to group the various details given in these tables, in order to make a comparison between 1883 and 1882, and have found that for this purpose it is only possible to take values, as quantities are fragmentary. The following table shows the imports of metals in the month and ten months ended October 31 of last year, as compared with the corresponding periods of 1882:

Articles.	October.	Ten months.
Brass	1883. \$41,849	1882. \$67,361
Copper	1883. 67,564	1882. 60,764
Iron and steel	1883. 4,079,888	1882. 4,993,050
Lead	1883. 7,577	1882. 8,767
Metals comp.	1883. 951,908	1882. 958,700
Mineral substan.	1883. 7,360	1882. 10,483
Tin	1883. 512,825	1882. 580,840
Zinc	1883. 9,391	1882. 97,365

Total. \$4,971,804 \$6,308,467 \$50,588,292 \$68,911,836

These values embrace ores as well as finished products. The totals show how trade has fallen off since the preceding year. Iron

and steel heavily preponderate, notwithstanding the great development of our domestic trade. Tin plates are included in iron and steel. The tin separately classed means crude or pig tin.

We have added the domestic and foreign exports together, so as to show the total volume of our export trade, which is given in the following table for the month and ten months ended October 31, 1883, as compared with the corresponding periods of 1882:

Articles.	October.	Ten months.
Brass	1883. \$50,517	1882. \$19,278
Copper	1883. 464,816	1882. 25,624
Iron and steel	1883. 2,921,935	1882. 2,434,730
Lead	1883. 8,756	1882. 10,534
Metals comp.	1883. 297	1882. 745
Mineral substan.	1883. 100	1882. 100
Tin	1883. 1,428	1882. 982
Zinc	1883. 4,888	1882. 12,894

Total. \$2,707,829 \$2,495,201 \$24,280,071 \$21,222,005

It will be seen that our exports of metals have increased in the latter period over the former, which is due almost entirely to the heavy increase in copper. The bulk of the metal export trade is, however, confined to iron and steel.

## The Course of Tin Plates.

The decline which has recently taken place in the price of tin plates in this market begins to attract a good deal of attention among the metal trade; it may, therefore, be the proper moment for reviewing the situation.

A year since coke tin commanded in New York \$5.37½ to \$5.50 per box, and it is now sold at \$4.95 to \$5. In Liverpool it was worth in the middle of December, 1882, 16/6 to 20/6, and at present does not bring over 16/6. Shipments from England during the first eight months amounted to 181,454 tons, against 181,856 in 1882; this shows an export at the rate of 270,000 tons per annum this year, while last year the total export amounted to the same figure, against 239,300 in 1881. The United States imported during the first nine months of the current year 167,607 tons net, against last year during the corresponding period 164,590 tons. It thus appears that there has been great steadiness, as compared with 1882, both in the general English export and the American import. While this has been the case it is known that neither in our ports nor in the interior is there the least accumulation of stock tending to unfavorably weigh on the markets and depress the price. The situation on both sides of the Atlantic is acknowledged to have seldom been so sound, for it is well known that the output in Wales barely suffices to meet the current demand from all quarters, and that makers are booked ahead several months into the new year. Consumption in the United States for all sorts of tin plates has left nothing to be wished for. If there had been any serious disappointment under this head, there would be a glut of tin plates in this country somewhere, but such is not the case.

The alleged cause of the decline is that tin plates merely follow in the wake of block tin, which has been tending downward rapidly, and may go lower. Yet we have seen tin rule considerably lower, while tin plates sold 20 per cent. higher than they do now, and at a time when American tin-plate consumption had hardly begun to develop on such an extraordinary scale, nor Wales exported half as much as she does at present, for in 1876 the English export was only 132,564 tons. Rapid as the decline in block tin has been for a month or two past, it certainly seems to influence tin plates more than it should.

In order to show the amount of tin plates consumed in our export trade in canned eatables, &c., and therefrom form a judgment, at least approximately, as to what the domestic consumption may have been, we append a table exhibiting the movement:

## DOMESTIC EXPORT OF TINWARE AND CANNED GOODS DURING THE FIRST NINE MONTHS.

Articles.	Nov. 1883.	Dec. 1883.	Total. 1883.	Total. 1882.
Tin plates	10,072	5,221	109,487	110,824
Iron	25,613	20,475	326,451	454,235
Steel	4,768	4,375	31,007	27,480
Total	40,453	30,074	516,975	829,397

In the following table are shown the imports of iron ore and various metals, the units of quantity being in some cases tons, and in others pounds and casks:

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dollar went to American shipowners. This is a lamentable showing, but if we had exported in 1883 over 100,000,000 bushels, as in the year before, or say double the amount actually exported, the exhibit would have been still more discreditable.

#### The Condition of Business.

The past week has been quiet. We hear of but few transactions, though inquiries seem to be abundant. But, unfortunately, inquiries do not always lead to business. In the midst of the prevailing dullness, however, there is a feeling of hopefulness and confidence among sellers that no lower prices will be realized than those which have already been made. In some directions an advance is even looked for. But consumers are generally indifferent about laying in stocks, and consequently there is very little ground on which to base opinions on the future course of business. In this connection, therefore, it may be well to quote the statements of some leading merchants and manufacturers in regard to the outlook for iron and steel.

A prominent pig-iron merchant says he believes prices are now at bottom, and that inside of six weeks it will be found that pig iron of good quality is actually scarce in this vicinity. He bases his belief on the fact that so many more furnaces are out of blast in the East than has been the case for years, while others are to be put out of blast, making the producing capacity, as he computes it, below the consumption. Whenever blast furnaces were blown out last year they almost invariably had stocks of pig iron on hand, which helped to supply the needs of consumers throughout the year. These furnaces are now not only out of blast, but their stocks have disappeared. Consequently, there is less of a supply to draw from, while consumption, according to the best authorities, continues to be very heavy.

A steel merchant whose customers are scattered through New England and New York states that he finds no indications of improving business among them, but, on the contrary, excessive competition has caused them to reduce their prices so ruinously that they appeal to him and other merchants to give them lower rates on their material, to enable them to secure cost, at least, for their products. He believes that more failures are inevitable in many branches of trade before production is sufficiently restricted.

A very prominent steel-rail manufacturer says that there never was a time at the first of January when so many rails were contracted for as now, in proportion to the capacity of the mills, of course omitting the rail mills which are idle.

An agent for a car-building company says that the car-builders are "hungry for orders," but contracts are scarce. One railroad company have given out orders for 800 freight cars, and it is rumored that another company have purchased 2000 freight cars, but work is by no means sufficiently abundant. The locomotive builders are also seeking for contracts, and orders for an aggregate of 200 locomotives are said to be in course of negotiation.

• The iron-rolling mills are resuming operations pretty generally, the holiday suspension having been put to practical account in making necessary repairs. Wages have been reduced wherever possible. It is reported that in many cases the mills have orders booked ahead for three and four weeks. Some mill owners are endeavoring to get better prices for their products, while others are naming lower figures. The consequence is that the manufactured-iron trade has an irregular appearance.

The manufacturers of mild steel are increasing their efforts, to secure a wider field. Steel beams and channels are now offered at the same price as if made of iron. We believe this is the first time such an offer has been made. Soft steel in other forms is held at rates but little above the cost of good iron, and under the cost of the special irons, which have always commanded a high price on account of their excellent quality.

#### The Profits of Speculation.

The brief yet brilliant career of Mr. Villard, followed by his complete financial ruin, is one of those lessons which it is profitable to heed. It illustrates the vicissitudes of life in Wall street, where the prince of to-day may be the beggar of to-morrow. Mr. Villard was not as shrewd as some others in whose hands are intrusted the fortunes of their fellow-men, for he gave his personal guarantee for the keeping of his word. He would seem to have been more honest, however, for, when his great railroad enterprises went down, he did what he could to save his friends from the wreck. His example in this respect will not be followed to any great extent, we fear. As one of the most famous operators of the street puts it—one of that kind who can keep sorely aloof from personal entanglements, whatever may befall others about him—"I believe in running my business, and not letting it run me."

One of our contemporaries, which professes to speak conscientiously, attempts to point a moral, in that it "alone, of all the journals in the city, has withheld its tribute from the fallen railway gambler whose collapse is a great moral lesson—a warning to all men to avoid speculative enterprises, and an admonition to the rising generation of men that wealth, to be respected and made

"certain, must come through slow, honest, sturdy processes." And again: "His example has been vicious and demoralizing, because it has turned scores of men into the vortex of speculation, to be stranded as he is himself."

It is natural, perhaps, to throw stones at the prostrate lion. Had Mr. Villard succeeded, he would have been one of the greatest men in the country; not succeeding, he is rated as "a ruined gambler." That is just the difference between success and failure, except that the latter is often more to a man's credit than the former.

#### Foreign Iron Ores.

A correspondent writes to us for information, as follows:

Being remotely connected with the iron trade, I would esteem it an especial favor if you would give me some information. I desire to ascertain the manner of disposing of foreign ores in this country, why the term "unit" is employed, and if they are sold by the ton or otherwise. An answer to the above would greatly oblige.

INQUIRER.

As our correspondent evidently means foreign iron ores, our reply will relate to them. They are sold principally to the manufacturers of Bessemer pig iron, four or five Eastern Bessemer steel companies taking very much the largest part of the imports. Some foreign ores are used by Eastern foundry pig iron manufacturers. The manner of disposing of these ores is, we believe, not unlike any other commercial transactions. Some ores are sold after negotiations between importers and consumers, while others are sold by the foreign mining companies direct. The term "unit" refers to the contents of metallic iron.

Thus, if a price of 10 cents a unit is quoted, it means \$5 a ton for an ore containing 50 per cent. of metallic iron, or \$6 a ton for a 60 per cent. ore. The ore is sold by the ton of 2240 pounds. All foreign iron ores, however, are not sold by the unit. Some of them are sold by the ton without reference to the unit, the high character of the company mining and selling them being a sufficient guarantee that they contain the average quantity of metallic iron commercially known to be found in them.

#### The Secretaryship of the Mining Engineers.

The resignation of the secretaryship of the American Institute of Mining Engineers by Dr. Thomas M. Drown, is a cause for sincere regret by the membership of that important society. His rare tact and judgment in all his official and personal relations with the membership, and his conscientious fidelity in the editing of the transactions, have contributed more than anything else to make the Institute strong and place it in the first rank as a scientific society. It is in no respect flattering to say that Dr. Drown was an ideal secretary, and that his place will be much harder to fill than if it were an original vacancy. His successor will find himself under the necessity of conforming to a standard demanding peculiar qualifications. Naturally, an important office, affording large opportunities for an international scientific reputation, is being sought by several candidates.

Dr. R. W. Raymond, who was appointed secretary by the council to serve from January 1 to the annual meeting, February 19, is a candidate for election as permanent secretary. Of his brilliant qualifications there can be no question. Mr. Charles Kirchoff, Jr., is also a candidate, and is deservedly accorded favorable consideration on the score of a charming personal character and varied scientific attainments. Mr. Willard P. Ward is a third candidate, and Prof. Frederick Prime a fourth. These gentlemen possess widely various qualifications, and the membership cannot fail to value the opportunity of selection offered by so excellent a list of candidates. Instead of indicating the existence of internal dissensions in the Institute, this multiplicity of strong candidates for its most important executive office may be held to show that its dignities and opportunities are fully appreciated, and that they are great enough to invite an amicable contest among gentlemen who are in no sense dependent upon such preference for a career. We congratulate the membership that so many gentlemen of conspicuous fitness are willing to allow the use of their names as candidates. As the contest should, and will, be decided solely with reference to the best interests of the Institute, and not upon personal grounds, the unsuccessful candidates will be in no sense compromised by their candidacy.

Our article this week describing Mr. Fithian's engine and gear will be found interesting in many respects. Mr. Fithian's machinery, as now arranged, is exceedingly well adapted to the running of electric-light machinery, and from experiments which have been made within the past few weeks it is safe to say that it cannot but meet with a most favorable reception. The figures given for the power expended for running a certain number of arc lights were found surprisingly low, but careful revision of the calculations leaves no doubt as to their correctness.

The appropriations authorized for the support of government in New York City during the present year are \$4,000,000, which is \$8,000,000 in excess of the amount levied for

State, county, city and town purposes in the entire commonwealth of Massachusetts. New York City being pre-eminently the seat of important manufactures, we here have a tax on industry hard to be borne. Comptroller Grant must push his investigations.

On the 3d inst. Mr. James B. Brinsmade died at his residence in Brooklyn, of syncope of the heart. Mr. Brinsmade was long and prominently identified with the iron trade of this city and State, and at the time of his death had entered upon his 80th year. His name begins the roll for 1884 of the departed in the iron trade. We hope to be able to present in a future issue a biographical sketch of Mr. Brinsmade, the material for which is not immediately available.

#### WASHINGTON NEWS.

January 3.—Representative Bland had an interview with Mr. Burchard, Director of the Mint, this morning, in regard to the number of trade dollars in circulation. The latter expressed the opinion that between 5,000,000 and 6,000,000 of the coin were out and in the hands of tradesmen and the people generally, instead of being in the possession of speculators. The remainder of the \$35,000,000 originally coined are thought to have been exported or remelted. Mr. Bland says it is questionable whether the Government, having issued the trade dollar with the stamp of the Government upon it, could not be required to take it for Government dues at its nominal value.

January 4.—In a communication to the Department of State, the Consul of the United States at Teneriffe reports the completion of the submarine cable from Cadiz to that port.

#### A NEW TREATY WITH SPAIN ABOLISHING DISCRIMINATING DUTIES.

January 4.—The following statement with regard to the negotiation and execution of the new commercial agreement with Spain has been furnished by the State Department:

In pursuance of the instructions given to him by Secretary Frelinghuysen before his departure for his post, Mr. Foster, the United States Minister to Spain, has lately conducted a successful negotiation with the Spanish Government for the removal of the differential duties between Spanish colonies and the United States, and the *Official Gazette*, of Madrid, will publish to-morrow a text of an agreement signed on the 2d inst., by the President's authority, between Mr. Foster and the Spanish Minister of State, providing for the abolition of the discriminating duties which at present affect the commerce between the United States and Cuba and Porto Rico. It has been the Spanish policy in the colonies for many years to maintain a system of discriminating duties on imports to favor trade with the mother country, and Spanish vessels, whether in the home or foreign trade. This was accomplished by fixing four different tariffs of import duties. The first or lowest column applied only to goods brought from the Spanish Peninsula and the Balearic Islands to Cuba and Porto Rico under the Spanish flag; the second—about double the rate of the first—applied to the same goods when brought from Spain in a foreign vessel; the third—about treble the rate of the first—applied to goods brought from any foreign country under the Spanish flag, and the fourth or highest scale of duties was imposed on foreign goods brought in foreign vessels. This scheme, by which goods from the United States, when carried to Cuba or Porto Rico under our flag, paid duties averaging about 30 per cent. higher than if carried thither under the Spanish flag, operated as a serious discrimination against American vessels engaging in the Cuban trade. By an act of Congress of June 30, 1864 (Revised Statutes, Section 2502), a discriminating duty of 10 per cent., in addition to the duties imposed by law, is to be collected in the United States on all goods coming hither in foreign vessels, that this extra duty is not collectable when the goods shall come in vessels entitled by treaty or act of Congress to have their cargoes treated as though under the United States flag. The effect of this act was to impose a discrimination of 10 per cent. against merchandise brought from Spanish ports to the United States. The bulk of the Spanish trade of this country being with the colonies, the discrimination proved onerous upon the Spanish shipping of Cuba and Porto Rico, as more than three-fourths of the export trade of Cuba and Porto Rico is with the United States. Ignoring the fact that the American statute did precisely what the Cuban and Porto Rican tariffs already did, and favored imports under the native flag against imports under a foreign flag, the Spanish Government treated it as unfriendly legislation, and on March 12, 1867, adopted a measure of ostensible retaliation by issuing a decree, the fifth article of which reads thus:

Article 5. Goods coming from ports of the United States and carried under the Spanish flag shall pay, upon being imported into the Island of Cuba, the duties fixed in the tariff for the same goods under a foreign flag, until by a special convention with the Government of that Republic for the abrogation of its laws touching exports in Spanish vessels for the Antilles, or for the reduction of the duties which now bear upon the products of the Antilles in the aforesaid ports, the modification of the present order shall become proper.

It is to be noted that this decree contains an error of statement—the law of the United States to which reference is made being in relation to imports from the colonies, and not exports thither. By this decree all merchandise from the United States, whether carried in Spanish vessels or under any foreign flag, pays the duties of the fourth or highest column of the customs tariff of Cuba and Porto Rico. Foreign merchandise from any other country than the United States might enter those islands, if carried thither in Spanish vessels, on payment of the lower duties of the third column of the tariff, but against the products of the United States the discrimination, before only partial, was made total.

Since 1867 many efforts have been made to remove a state of things so injuriously affecting the bulk of the foreign trade of Cuba and Porto Rico. It was urged by Spain that there was, in fact, no discrimination against the United States flag; that the Spanish vessels trading with our ports were treated precisely as our vessels were, and that the 10 per cent. discrimination imposed by us should be removed. But this Government held that the discrimination in the colonies was positive and total against the trade of the United States, and declined to modify its legislation. By statutes in 1828, 1830 and 1832, Congress gave to the President power, whenever satisfied that no discriminating duties of tonnage or imposts are imposed in any foreign country on the vessels or goods of the United States, to suspend any discriminating duties in the United States affecting the vessels or goods of such foreign country so long as perfect reciprocity should exist. This legislation is found in Section 4228 of the Revised Statutes. The President's power under it to effect a remedy and to remove, by agreement with a foreign State, any discrimination weighing on commerce therewith is ample. It had been thought to take advantage of that power by suspending the discriminating duty of 10 per cent., of which Spain has never ceased to complain, but hitherto the Spanish Government has been unwilling or unprepared to afford such concession as would, in fact, insure reciprocal exemption of American vessels in the Antilles from discrimination. It will only remain for the President to issue his proclamation under Section 4228 of the Revised Statutes, suspending the discriminating duties of tonnage and import imposed here against Spanish vessels and products, to establish entire reciprocity of intercourse with the colonies.

MANUFACTURES WITH AGRICULTURE.

"Pennsylvania had a later and slower settlement. She has no seacoast, and is almost destitute of natural water-ways and great aqueous basins for food-fish supplies. But Pennsylvania acted upon the true theory of industrial development—that it should be various and symmetrical, furnishing lucrative employment for male and female, old and young, indoors and in the open air, unskilled and rough, as well as nicely adjusted to the peculiar tastes and finer aptitudes of those who are suffering for something to do."

#### A COMPARISON.

"More than half of the people of Virginia," says the report, "are farmers; only one in five of the Pennsylvanians are engaged in agriculture. In Virginia the competition is between one farmer and another in the sale of produce for which there is no near market, and the cheapening of products also cheapens the acres on which they are grown. So Virginia farm lands are valued at \$10.80 per acre, while those of Pennsylvania command \$49.30. So says the census of 1880. It also says that the average farm worker of Virginia produces crops worth \$180, while the Pennsylvania agriculturist gets \$431, because of the other four mouths seeking to be filled and competing for the supply. These are not isolated examples."

#### THE VALUE OF LANDS.

The report says: "To test the value of this hypothesis, let us divide the States and Territories of the United States into four classes, the first having less than 30 per cent. of the population engaged in agriculture; the second, those with 30 to 50 per cent.; third, 50 to 70 per cent., and fourth, those having 70 per cent. and upward."

The following is the result showing the value of lands:

Classes.	States and Territories.	Value of lands per acre.	Per cent. of workers in agriculture.
First.	15	\$38.65	18
Second.	13	30.55	42
Third.	18	13.53	58
Fourth.	6	5.18	77

#### THE INCOME OF THE FARMER.

The report, with some elaboration, then shows, from the census of 1880, that the owners of land find a great advantage in the increase of the proportion of non-agricultural population.

Taking the same classes as above, the report shows:

Classes.	Value of agricultural products per capita.	Proportion of workers in agriculture.
First.	\$457	18
Second.	394	42
Third.	361	56
Fourth.	160	77

In other words, 1,000,000 farmers in a manufacturing State make nearly three times as much as 2,000,000 farmers in an agricultural State.

#### THE WAGES OF LABOR.

The returns of the Department of Agriculture, compared with the statistics of the census, show that in 1870 the average wages of farm labor in the manufacturing or first class of States was \$34, while in the fourth or agricultural class it was but \$15. During the panic the competition with farm labor, owing to the non-employment of mechanics, brought the price of farm labor down to a point almost equal to pauperism. In 1882, after the return of manufacturing activity, under the tariff then in operation, agricultural labor again rose in price, averaging nearly \$25 in States of the first and second classes, as above, \$10.50 in the third and \$13.20 in the fourth classes, showing conclusively the great benefits of a large non-agricultural or manufacturing class, and that the fostering of manufactures by home protection is a direct benefit instead of a disadvantage to the agricultural population.

Representative Townsend, of Illinois, offered a resolution, which was adopted without objection, requesting the President to communicate all correspondence, reports and other information on the subject of the exclusion of American hog products by Germany and France. This information is asked as a basis for legislation, which nearly all Western Congressmen, without distinction of party, regard as necessary.

#### BILLS AFFECTING BUSINESS INTERESTS.

January 7.—

Among the bills introduced in the House to-day were the following:

By Mr. Sumner, of California.—To fix and establish the maximum rate of freight fares on the Union and Central Pacific railroads. It provides that after 60 days from the passage of this act it shall be unlawful for those companies to charge a greater sum than 70 per cent. of the lowest rates of freight or the lowest prices of carriage existing on December 3, 1883.

By Mr. Perkins, of Kansas.—To place molasses and sugar on the free list.

By Mr. White, of Kentucky.—To abolish the internal revenue tax on tobacco.

By Mr. Willis, of Kentucky.—To extend the time for the payment of tax on distilled spirits now in warehouses.

By Mr. Buckner, of Missouri.—To prevent undue contraction of paper circulation; to prohibit the issue of Treasury and bank notes of a less denomination than \$10.

By Mr. Dockery, of Missouri.—To reduce the duty on wearing apparel made in whole or in part of wool; to reduce the duty on wool to be manufactured into wearing apparel.

By Mr. Morrison, of Missouri.—To reduce the duty on wearing apparel made in whole or in part of wool; to reduce the duty on wool to be manufactured into wearing apparel.

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# The Iron Age

AND  
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### Labor Legislation.

The present Congress appears to understand the need of more detailed information regarding the condition and prospects of labor in this country than has heretofore been available. Some admirable work has been done in gathering this information in several of the States, notably in Massachusetts, New Jersey, Pennsylvania and Ohio. That the work of the bureaus of labor statistics in Indiana, Illinois, Missouri and Michigan has not become as well known as that of the States previously mentioned is due to the fact that they are of more recent organization. But the information gathered by these bureaus has, with very rare exceptions, related only to labor in the State making the report, and has in most cases at best been but fragmentary, even in its statements regarding the State labor. The only attempt made by the National Government on anything like a broad scale to collect statistics of wages and to gather information regarding labor is that of Mr. Joseph D. Weeks, as special agent of the Census Department, but this report, though it has been finished for several months, is not even in type yet, we believe, and consequently the information contained in it is not available.

The proposal to establish a national Bureau or Department of Labor Statistics we regard as of the utmost importance. So much of our legislation affects labor and its rewards, and consequently determines its condition, that it is of the greatest consequence that an attempt should be made to collect the information necessary to intelligent action, and without which any action can at the best be but a groping in the dark. Two years ago, when the tariff question was before Congress, and so many speakers on the subject claimed that it was at bottom a labor question, and that protective tariffs had sensibly affected the rewards of labor in this country, a demand was made on the Treasury Department for information bearing on this subject, and, to the utter surprise of a great many, it was found that no department of our Government was charged, either directly or indirectly, with the investigation of facts connected with this vital matter. There was a Bureau of Statistics in the Treasury Department, which should more properly be named a bureau of commercial statistics; there was a Department of Agriculture that investigated questions connected with this industry, but no one seemed to be charged to ascertain the

facts that affect in such an important degree the well-being and happiness of the great majority of our people. Not only are the welfare and happiness of the individual involved in these questions, but it is evident to every careful observer that some of the most vital questions connected with the peace and continued prosperity of our country as a political entity depend on the course of our legislation regarding labor or affecting labor, and it must seem the height of folly to a disinterested observer that important action on these subjects should be taken without the most thorough and reliable information upon which to base such action.

It is for these reasons that we favor the establishment of a Bureau of Labor Statistics that we may secure correct information on the topics suggested—information that will not only enable legislation to be undertaken intelligently, but will also, we believe, go far to disabuse the minds of the better and intelligent class of workmen of many of the false and erroneous views that now prevail among them.

### The State of Trade in Great Britain.

The reasons for the present unsettled state of the English trade are complex. The depression of a few years back was mainly caused by the countries which produced the raw materials wishing to develop their own resources more rapidly than was consistent with healthy growth. To this end they borrowed from the rest of the world money which, on account of a succession of poor harvests, they were unable to refund. Consequent upon this failure to meet their liabilities was a reduction of their imports from the manufacturing countries. This so greatly reduced the demand for finished products that the markets rapidly became overstocked. The revival of trade commenced in 1879 and continued until 1881, but from that period up to the present date, the depression has been steadily increasing.

From all departments of English trade comes the same complaint—that profits, where not completely annihilated, have been so far reduced as hardly to warrant a continuance of work. The cotton mills have insisted upon a reduction of wages, as they must decrease their expenses or else be forced to close. The unprecedented activity in shipbuilding has also suffered a severe decline, while the iron and steel industries are in the same discouraging condition. Although some of the complaints are undoubtedly exaggerated, it must be admitted that profits have been greatly reduced in the last two years. Notwithstanding all these unpleasant facts, the amount of trade in England remains practically the same. The reports of the railway companies show that traffic has not perceptibly decreased, and, in fact, is as large as it has ever been. Speculation of every description has stopped, capitalists having become very cautious and refusing to invest in anything but the most trustworthy ventures.

The first explanation to account for this general disappointment is found in the number of successive bad harvests by which Europe has been afflicted. The great majority of labor, with the exception of that engaged in the metallurgical industries and a few other trades, is employed in raising or handling the products of the soil and making them suitable to the wants of man. An over-production of these articles is something from which the world at large never suffers, while a very few years of poor harvests, resulting in a reduction of such produce, will immediately affect the whole industrial community. The great risk in all agricultural pursuits, of whatever description, lies in the fact that the amount of outlay in both time and money is continuous, year after year, while the recompense, which is entirely at the mercy of sun and rain, is subject to annual variation. The whole agricultural community, in the event of a bad harvest, not only cannot supply the dependent industries with the raw materials necessary for the carrying on of their work, but the farmers, having made no profit themselves, are not able to buy the manufactured products of the towns. Since the middle of the present century, England or the Continent has not been subject to such agricultural depression as in the last six or seven years. The agricultural classes in Europe greatly outnumber all the other producers taken together, and it is not surprising that when they suffer the whole population are likewise affected, and the loss to which each country is subjected necessarily hurts every other one proportionally.

Besides a continuance of poor harvests, Europe has suffered from a prevalence of cattle disease, which, though of not so much moment, is still an important factor as affecting its commercial prosperity. But though the state of the crops is everywhere conceded to be the chief cause for the present depression in English trade, it is by no means the only one. Protective tariffs, enforced as they are in the United States and on the Continent, undoubtedly have had a very unfavorable effect upon British manufacturers; the result of this policy has been felt more particularly of late as one important State after another has raised its customs duties. The remarkable increase in the production of iron and steel in the United States has withdrawn this country from the number of those receiving their supplies from England. Not only has the United States become independent of the English supply, but also Russia and many other European countries are no longer forced to buy in English markets, their own produc-

tion meeting the demands of home consumption. Even some of the colonies of Great Britain which hitherto have allowed the introduction of goods free of duty are now trying the effect of a protective duty, which necessarily decreases the demand for English goods. The Weavers' Committee of Northeast Lancashire recently issued a circular calling attention to the dues imposed by the colonies upon English cotton manufactures, and pointed out how they would seriously affect the export trade of Great Britain.

Nor must the fact be ignored that the once proud pre-eminence of Great Britain in the markets of the non-manufacturing countries of the world is now being disturbed, greatly to her commercial disadvantage and pecuniary loss, by such rivals as Germany and Belgium. No longer do the railway requirements of Italy, Spain, Portugal and other humbler countries turn toward Great Britain as the only source of supply. Germany and Belgium take many contracts in spite of low British prices. German and French hosiery and woolen goods also compete favorably with British goods in neutral markets. A very striking example of how British trade supremacy has been lost is seen in the transfer of the American wire rod trade from British to German hands. Only a few rods of a special quality are now made throughout Great Britain, rods being imported from Germany even for British home use. The past two or three years have witnessed great changes in this important direction.

While the above mentioned are the principal causes of the present stagnation in English trade, there are various others of a temporary nature, which nevertheless have a serious effect for the time being. Before the recent war in the East a considerable amount of English capital was invested in Egyptian securities. The military operations of England necessitated by the rebellion of Arabi produced the more or less disastrous results in trade which always accompany a war. Furthermore, the decline in Egyptian stocks seriously affected the English investors, causing considerable losses, which the present trouble in the Soudan will not tend to diminish. In consequence of these and other events, there has been a complete collapse of speculation throughout Europe, which means that it is next to impossible to obtain money for commercial enterprises, everybody looking with distrust upon new proposals. Trade is checked and capitalists are holding their capital in such a way that they can apply it at a moment's notice. As soon as this excessively conservative feeling passes away speculation will again become active. The state of trade, being dependent as it is in England and in other countries upon the harvests, will not, however, become materially better until the seasons are once more favorable.

Americans cannot help observing the almost identical condition of trade on both sides of the Atlantic. The depression here is not only severe, but general in its character, the few branches of business which for a long time preserved a distinctive vitality having gradually succumbed under the corrosive influence of excessive conservatism among consumers. There is this difference, however, between the situation in Great Britain and in America—the outlook is gloomy and less hopeful than ever, while here confidence seems to be returning and the skies are brighter.

### Our Foreign Metal Trade.

We have received from Hon. Joseph Nimm, Jr., the October statement of the Bureau of Statistics, showing the imports and exports of metals for the month and ten months ended October 31. These monthly statements are much more valuable than they were formerly, owing to the greater detail in which the statistics are given. It will take several months, however, to get them in complete shape for comparison, as the details for last year are not always available. There is much satisfaction to be obtained, nevertheless, from the specific information now given concerning the leading items which figure in our imports of iron and steel. Iron ore, cotton-ties, wire rods, scrap steel and some other articles are now separately stated, and those interested in these lines of trade can ascertain from month to month how much is being imported. The same improvements have been made in the arrangement of the export tables.

We have endeavored to group the various details given in these tables, in order to make a comparison between 1883 and 1882, and have found that for this purpose it is only possible to take values, as quantities are fragmentary. The following table shows the imports of metals in the month and ten months ended October 31 of last year, as compared with the corresponding periods of 1882:

Articles.	October.	Ten months.
Brass.....	1882	1883
\$11,549	\$10,381	\$11,107
67,364	40,784	37,624
Copper.....	4,079,986	4,925,082
Iron and steel.....	4,434,750	19,813,115
Lead.....	7,977	10,524
Metals & a comp.....	951,302	258,700
Mine substan.....	1,627,466	1,721,938
Tin.....	10,485	73,614
Zinc.....	512,385	530,741
	8,360	97,966
Total.	\$4,971,804	\$4,303,467
	\$30,688,292	\$30,311,886

These values embrace ores as well as finished products. The totals show how trade has fallen off since the preceding year. Iron

and steel heavily preponderate, notwithstanding the great development of our domestic trade. Tin plates are included in iron and steel. The tin separately classed means crude or pig tin.

We have added the domestic and foreign exports together, so as to show the total volume of our export trade, which is given in the following table for the month and ten months ended October 31, 1883, as compared with the corresponding periods of 1882:

Articles.	October.	Ten months.
Brass.....	1882	1883
\$39,517	\$19,370	\$19,378
464,816	25,624	4,085,250
Iron and steel.....	2,921,925	9,434,750
Lead.....	8,756	58,097
Metals & a comp.....	207	745
Mineral substan.....	100	100
Tin.....	1,426	20,464
Zinc.....	932	12,894
	4,888	108,097
Total.	\$2,707,829	\$2,195,201
	\$24,230,071	\$21,222,003

It will be seen that our exports of metals have increased in the latter period over the former, which is due almost entirely to the heavy increase in copper. The bulk of the metal export trade is, however, confined to iron and steel.

### The Course of Tin Plates.

The decline which has recently taken place in the price of tin plates in this market begins to attract a good deal of attention among the metal trade; it may, therefore, be the proper moment for reviewing the situation. A year since coke tin commanded in New York \$5.37½ to \$5.50 per box, and it is now sold at \$4.95 to \$5. In Liverpool it was worth in the middle of December, 1882, 16/6 to 20/6, and at present does not bring over 16/6. Shipments from England during the first eight months amounted to 181,454 tons, against 181,856 in 1882: this shows an export at the rate of 270,000 tons per annum this year, while last year the total export amounted to the same figure, against 239,300 in 1881. The United States imported during the first nine months of the current year 167,607 tons net, against last year during the corresponding period 164,590 tons. It thus appears that there has been great steadiness, as compared with 1882, both in the general English export and the American import. While this has been the case it is known that neither in our ports nor in the interior is there the least accumulation of stock tending to unfavorably weigh on the markets and depress the price. The situation on both sides of the Atlantic is acknowledged to have seldom been so sound, for it is well known that the output in Wales barely suffices to meet the current demand from all quarters, and that makers are booked ahead several months into the new year. Consumption in the United States for all sorts of tin plates has left nothing to be wished for. If there had been any serious disappointment under this head, there would be a glut of tin plates in this country somewhere, but such is not the case.

The alleged cause of the decline is that tin plates merely follow in the wake of block tin, which has been tending downward rapidly, and may go lower. Yet we have seen tin rule considerably lower, while tin plates sold 20 per cent. higher than they do now, and at a time when American tin-plate consumption had hardly begun to develop on such an extraordinary scale, nor Wales exported half as much as she does at present, for in 1876 the English export was only 132,564 tons. Rapid as the decline in block tin has been for a month or two past, it certainly seems to influence tin plates more than it should.

In order to show the amount of tin plates consumed in our export trade in canned eatables, &c., and therefrom form a judgment, at least approximately, as to what the domestic consumption may have been, we append a table exhibiting the movement:

Articles.	Nov. 1883.	Dec. 1883.	Total 1883.	Total 1882.
Tin plates.....	10,672	5,221	10,487	110,284
Iron.....	25,618	20,475	25,641	454,633
Steel.....	4,768	4,378	151,007	274,680
Total.....				

dollar went to American shipowners. This is a lamentable showing, but if we had exported in 1883 over 100,000,000 bushels, as in the year before, or say double the amount actually exported, the exhibit would have been still more discreditable.

#### The Condition of Business.

The past week has been quiet. We hear of but few transactions, though inquiries seem to be abundant. But, unfortunately, inquiries do not always lead to business. In the midst of the prevailing dullness, however, there is a feeling of hopefulness and confidence among sellers that no lower prices will be realized than those which have already been made. In some directions an advance is even looked for. But consumers are generally indifferent about laying in stocks, and consequently there is very little ground on which to base opinions on the future course of business. In this connection, therefore, it may be well to quote the statements of some leading merchants and manufacturers in regard to the outlook for iron and steel.

A prominent pig-iron merchant says he believes prices are now at bottom, and that inside of six weeks it will be found that pig iron of good quality is actually scarce in this vicinity. He bases his belief on the fact that so many more furnaces are out of blast in the East than has been the case for years, while others are to be put out of blast, making the producing capacity, as he computes it, below the consumption. Whenever blast furnaces were blown out last year they almost invariably had stocks of pig iron on hand, which helped to supply the needs of consumers throughout the year. These furnaces are now not only out of blast, but their stocks have disappeared. Consequently, there is less of a supply to draw from, while consumption, according to the best authorities, continues to be very heavy.

A steel merchant whose customers are scattered through New England and New York states that he finds no indications of improving business among them, but, on the contrary, excessive competition has caused them to reduce their prices so ruinously that they appeal to him and other merchants to give them lower rates on their material, to enable them to secure cost, at least, for their products. He believes that more failures are inevitable in many branches of trade before production is sufficiently restricted.

A very prominent steel-rail manufacturer says that there never was a time at the first of January when so many rails were contracted for as now, in proportion to the capacity of the mills, of course omitting the rail mills which are idle.

An agent for a car-building company says that the car-builders are "hungry for orders," but contracts are scarce. One railroad company have given out orders for 800 freight cars, and it is rumored that another company have purchased 2000 freight cars, but work is by no means sufficiently abundant. The locomotive builders are also seeking for contracts, and orders for an aggregate of 200 locomotives are said to be in course of negotiation.

The iron-rolling mills are resuming operations pretty generally, the holiday suspension having been put to practical account in making necessary repairs. Wages have been reduced wherever possible. It is reported that in many cases the mills have orders booked ahead for three and four weeks. Some mill owners are endeavoring to get better prices for their products, while others are naming lower figures. The consequence is that the manufactured-iron trade has an irregular appearance.

The manufacturers of mild steel are increasing their efforts to secure a wider field. Steel beams and channels are now offered at the same price as if made of iron. We believe this is the first time such an offer has been made. Soft steel in other forms is held at rates but little above the cost of good iron, and under the cost of the special irons, which have always commanded a high price on account of their excellent quality.

#### The Profits of Speculation.

The brief yet brilliant career of Mr. Villard, followed by his complete financial ruin, is one of those lessons which it is profitable to heed. It illustrates the vicissitudes of life in Wall street, where the prince of to-day may be the beggar of to-morrow. Mr. Villard was not as shrewd as some others in whose hands are intrusted the fortunes of their fellow-men, for he gave his personal guarantee for the keeping of his word. He would seem to have been more honest, however, for, when his great railroad enterprises went down, he did what he could to save his friends from the wreck. His example in this respect will not be followed to any great extent, we fear. As one of the most famous operators of the street puts it—one of that kind who can keep serenely aloof from personal entanglements, whatever may befall others about him—"I believe in running my business, and not letting it run me."

One of our contemporaries, which professes to speak conscientiously, attempts to point a moral, in that it "alone, of all the journals in the city, has withheld its tribute from the fallen railway gambler whose collapse is a great moral lesson—a warning to all men to avoid speculative enterprises, and an admonition to the rising generation of men that wealth, to be respected and made

"certain, must come through slow, honest, 'sturdy processes.' And again: "His example has been vicious and demoralizing, 'because it has turned scores of men into 'the vortex of speculation, to be stranded 'as he is himself."

It is natural, perhaps, to throw stones at the prostrate lion. Had Mr. Villard succeeded, he would have been one of the greatest men in the country; not succeeding, he is rated as "a ruined gambler." That is just the difference between success and failure, except that the latter is often more to a man's credit than the former.

#### Foreign Iron Ores.

A correspondent writes to us for information, as follows:

Being remotely connected with the iron trade, I would esteem it an especial favor if you would give me some information. I desire to ascertain the manner of disposing of foreign ores in this country, why the term "unit" is employed, and if they are sold by the ton or otherwise. An answer to the above would greatly oblige.

#### INQUIRIES.

As our correspondent evidently means foreign iron ores, our reply will relate to them. They are sold principally to the manufacturers of Bessemer pig iron, four or five Eastern Bessemer steel companies taking very much the largest part of the importations. Some foreign ores are used by Eastern foundry pig iron manufacturers. The manner of disposing of these ores is, we believe, not unlike any other commercial transactions. Some ores are sold after negotiations between importers and consumers, while others are sold by the foreign mining companies direct. The term "unit" refers to the contents of metallic iron. Thus, if a price of 10 cents a unit is quoted, it means \$5 a ton for an ore containing 50 per cent. of metallic iron, or \$6 a ton for a 60 per cent. ore. The ore is sold by the ton of 2240 pounds. All foreign iron ores, however, are not sold by the unit. Some of them are sold by the ton without reference to the unit, the high character of the company mining and selling them being a sufficient guarantee that they contain the average quantity of metallic iron commercially known to be found in them.

#### The Secretaryship of the Mining Engineers.

The resignation of the secretaryship of the American Institute of Mining Engineers by Dr. Thomas M. Drown, is a cause for sincere regret by the membership of that important society. His rare tact and judgment in all his official and personal relations with the membership, and his conscientious fidelity in the editing of the transactions, have contributed more than anything else to make the Institute strong and place it in the first rank as a scientific society. It is in no respect flattering to say that Dr. Drown was an ideal secretary, and that his place will be much harder to fill than if it were an original vacancy. His successor will find himself under the necessity of conforming to a standard demanding peculiar qualifications. Naturally, so important an office, affording large opportunities for an international scientific reputation, is being sought by several candidates. Dr. R. W. Raymond, who was appointed secretary by the council to serve from January 1 to the annual meeting, February 19, is a candidate for election as permanent secretary. Of his brilliant qualifications there can be no question. Mr. Charles Kirchoff, Jr., is also a candidate, and is deservedly accorded favorable consideration on the score of a charming personal character and varied scientific attainments. Mr. Willard P. Ward is a third candidate, and Prof. Frederick Prime a fourth. These gentlemen possess widely various qualifications, and the membership cannot fail to value the opportunity of selection offered by so excellent a list of candidates. Instead of indicating the existence of internal dissensions in the Institute, this multiplicity of strong candidates for its most important executive office may be held to show that its dignities and opportunities are fully appreciated, and that they are great enough to invite an amicable contest among gentlemen who are in no sense dependent upon such preference for a career. We congratulate the membership that so many gentlemen of conspicuous fitness are willing to allow the use of their names as candidates. As the contest should, and will, be decided solely with reference to the best interests of the Institute, and not upon personal grounds, the unsuccessful candidates will be in no sense compromised by their candidacy.

Our article this week describing Mr. Fithian's engine and gear will be found interesting in many respects. Mr. Fithian's machinery, as now arranged, is exceedingly well adapted to the running of electric-light machinery, and from experiments which have been made within the past few weeks it is safe to say that it cannot but meet with a most favorable reception. The figures given for the power expended for running a certain number of arc lights were found surprisingly low, but careful revision of the calculations leaves no doubt as to their correctness.

The appropriations authorized for the support of government in New York City during the present year are \$4,000,000, which is \$8,000,000 in excess of the amount levied for

State, county, city and town purposes in the entire commonwealth of Massachusetts, New York City being pre-eminently the seat of important manufactures, we here have a tax on industry hard to be borne. Comptroller Grant must push his investigations.

On the 3d inst. Mr. James B. Brinsmade died at his residence in Brooklyn, of syncope of the heart. Mr. Brinsmade was long and prominently identified with the iron trade of this city and State, and at the time of his death had entered upon his 60th year. His name begins the roll for 1884 of the departed in the iron trade. We hope to be able to present in a future issue a biographical sketch of Mr. Brinsmade, the material for which is not immediately available.

#### WASHINGTON NEWS.

January 3.—Representative Bland had an interview with Mr. Burchard, Director of the Mint, this morning, in regard to the number of trade dollars in circulation. The latter expressed the opinion that between 5,000,000 and 6,000,000 of the coin were out and in the hands of tradesmen and the people generally, instead of being in the possession of speculators. The remainder of the \$35,000,000 originally coined are thought to have been exported or remelted. Mr. Bland says it is questionable whether the Government, having issued the trade dollar with the stamp of the Government upon it, could not be required to take it for Government dues at its nominal value.

January 4.—In a communication to the Department of State, the Consul of the United States at Teneriffe reports the completion of the submarine cable from Cadiz to that port.

#### A NEW TREATY WITH SPAIN ABOLISHING DISCRIMINATING DUTIES.

January 4.—The following statement with regard to the negotiation and execution of the new commercial agreement with Spain has been furnished by the State Department:

In pursuance of the instructions given to him by Secretary Frelinghuysen before his departure for his post, Mr. Foster, the United States Minister to Spain, has lately conducted a successful negotiation with the Spanish Government for the removal of the differential duties between Spanish colonies and the United States, and the *Official Gazette*, of Madrid, will publish to-morrow a text of an agreement signed on the 2d inst., by the President's authority, between Mr. Foster and the Spanish Minister of State, providing for the abolition of the discriminating duties which at present affect the commerce between the United States and Cuba and Porto Rico. It has been the Spanish policy in the colonies for many years to maintain a system of discriminating duties on imports to favor trade with the mother country, and Spanish vessels, whether in the home or foreign trade. This was accomplished by fixing four different tariffs of import duties. The first or lowest column applied only to goods brought from the Spanish Peninsula and the Balearic Islands to Cuba and Porto Rico under the Spanish flag; the second—about double the rate of the first—applied to the same goods when brought from Spain in a foreign vessel; the third—about treble the rate of the first—applied to goods brought from any foreign country under the Spanish flag, and the fourth or highest scale of duties was imposed on foreign goods brought in foreign vessels. This scheme, by which goods from the United States, when carried to Cuba or Porto Rico under our flag, paid duties averaging about 30 per cent. higher than if carried thither under the Spanish flag, operated as a serious discrimination against American vessels engaging in the Cuban trade. By an act of Congress of June 30, 1864 (Revised Statutes, Section 2502), a discriminating duty of 10 per cent., in addition to the duties imposed by law, is to be collected in the United States on all goods coming hither in foreign vessels, that this extra duty is not collectable when the goods shall come in vessels entitled by treaty or act of Congress to have their cargo treated as though under the United States flag. The effect of this act was to impose a discrimination of 10 per cent. against merchandise brought from Spanish ports to the United States. The bulk of the Spanish trade of this country being with the colonies, the discrimination proved onerous upon the Spanish shipping of Cuba and Porto Rico, as more than three-fourths of the export trade of Cuba and Porto Rico is with the United States. Ignoring the fact that the American statute did precisely what the Cuban and Porto Rican tariffs already did, and favored imports under the native flag against imports under a foreign flag, the Spanish Government treated it as unfriendly legislation, and on March 12, 1867, adopted a measure of ostensible retaliation by issuing a decree, the fifth article of which reads thus:

Article 5. Goods coming from ports of the United States and carried under the Spanish flag shall pay, upon being imported into the Island of Cuba, the duties fixed in the tariff for the same goods under a foreign flag, until by a special convention with the Government of that Republic for the abrogation of its laws touching exports in Spanish vessels for the Antilles, or for the reduction of the duties which now bear upon the products of the Antilles in the aforesaid ports, the modification of the present order shall become proper.

It is to be noted that this decree contains an error of statement—the law of the United States to which reference is made being in relation to imports from the colonies, and not exports thither. By this decree all merchandise from the United States, whether carried in Spanish vessels or under any foreign flag, pays the duties of the fourth or highest column of the customs tariff of Cuba and Porto Rico. Foreign merchandise from any other country than the United States might enter those islands, if carried thither in Spanish vessels, on payment of the lower duties of the third column of the tariff, but against the products of the United States the discrimination, before only partial, was made total.

Since 1867 many efforts have been made to remove a state of things so injuriously affecting the bulk of the foreign trade of Cuba and Porto Rico. It was urged by Spain that there was, in fact, no discrimination against the United States flag; that the Spanish vessels trading with our ports were treated precisely as our vessels were, and that the 10 per cent. discrimination imposed by us should be removed. But this Government held that the discrimination in the colonies was positive and total against the trade of the United States, and declined to modify its legislation. By statutes in 1828, 1830 and 1832, Congress gave to the President power, whenever satisfied that no discriminating duties of tonnage or imports are imposed in any foreign country on the vessels or goods of the United States, to suspend any discriminating duties in the United States affecting the vessels or goods of such foreign country so long as perfect reciprocity should exist. This legislation is found in Section 4228 of the Revised Statutes. The President's power under it to effect a remedy and to remove, by agreement with a foreign State, any discrimination weighing on commerce therewith is ample. It had been thought to take advantage of that power by suspending the discriminating duty of 10 per cent., of which Spain has never ceased to complain, but hitherto the Spanish Government has been unwilling or unprepared to afford such concession as would, in fact, insure reciprocal exemption of American vessels in the Antilles from discrimination. It will only remain for the President to issue his proclamation under Section 4228 of the Revised Statutes, suspending the discriminating duties of tonnage and import imposed here against Spanish vessels and products, to establish entire reciprocity of intercourse with the colonies.

The agreement signed by Mr. Foster covers other points of difference heretofore discussed between the two countries. The first of these arose concerning the heavy import duty levied in Cuba on live fish taken at sea and brought into the island by foreign vessels. The duty imposed was practically prohibitory and nearly destroyed a lucrative industry pursued by the fishermen of Florida. The United States tariff imposes no duty on imported live fish, and consequently many appeals have been made to Spain to remove this duty on the grounds of equity and reciprocity. It is now removed by the agreement. There has also been for several years considerable discussion between the two Governments about the asserted right of Spanish consuls to charge, for verifying the manifest of a vessel bound for a Spanish port, a fee based upon the tonnage of the cargo, and not related to the clerical service rendered. This Government has always claimed that such a fee, so collected, was tantamount to an export duty on American goods, levied on the United States by the agents of a foreign power, and objection has been strenuously made to the exactation by a foreign Government outside of its jurisdiction of a duty which this Government cannot exact in view of the Constitutional prohibition of any export duty. Mr. Foster has succeeded in doing away with this obnoxious charge in respect of cargoes for Cuba and Porto Rico, and it is not probable that its collection on shipments to other Spanish ports will be persisted in now that the principle for which the United States contended has been recognized.

RETALIATORY TARIFF LEGISLATION.

January 7.—The sentiment is daily gaining strength among Western Representatives in favor of retaliatory legislation against those countries which exclude American pork, lard and other products on the ground that they are diseased or unhealthful. Representative Browne, of Indiana, to-day offered a bill which authorizes the President to prevent the importation into the United States of German and French wines, liquors and such other articles as he may see fit, until all restrictive or prohibitory laws and regulations by those countries affecting American cattle or swine, or the products of either, are revoked and repealed.

Representative Townsend, of Illinois, offered a resolution, which was adopted without objection, requesting the President to communicate all correspondence, reports and other information on the subject of the exclusion of American hog products by Germany and France. This information is asked as a basis for legislation, which nearly all Western Congressmen, without distinction of party, regard as necessary.

#### BILLS AFFECTING BUSINESS INTERESTS.

January 7.—Among the bills introduced in the House to-day were the following:

By Mr. Sumner, of California.—To fix and establish the maximum rate of freight fares on the Union and Central Pacific railroads. It provides that after 60 days from the passage of this act it shall be unlawful for those companies to charge a greater sum than 70 per cent. of the lowest rates of freight or the lowest prices of carriage existing on December 3, 1883.

By Mr. Perkins, of Kansas.—To place molasses and sugar on the free list.

By Mr. White, of Kentucky.—To abolish the internal revenue tax on tobacco.

By Mr. Willis, of Kentucky.—To extend the time for the payment of tax on distilled spirits now in warehouses.

By Mr. Buckner, of Missouri.—To prevent undue contraction of paper circulation; to prohibit the issue of Treasury and bank notes of a less denomination than \$10.

By Mr. Dockery, of Missouri.—To reduce the duty on wearing apparel made in whole or in part of wool; to reduce the duty on wool to be manufactured into wearing apparel.

(From Our Own Correspondent.  
WASHINGTON, D. C., Jan. 9, 1884.

A report has just been issued by the Department of Agriculture, showing the relation of agriculture to other industries. By way of showing the comparison of progress between an agricultural and a manufacturing State, the report refers to the development of the material resources of the States of Virginia and Pennsylvania:

#### AGRICULTURE WITHOUT MANUFACTURES.

"Three hundred years ago Virginia stood as to-day, a beautiful desert, with only

spontaneous crops growing upon her soil, deer and turkeys her only cattle, her waters simply a breeding place for fish, her lands without a market, her ores and coals lying worthless below the soil. Agriculture, manufactures and commerce were practically unknown. Naturally, agriculture comes first, but other industries must follow, or rural arts will pine and struggle through a dwarfed existence. Virginia has heretofore held too exclusively to the idea of the dignity and independence of agriculture. She has hitherto sought wealth in the soil, but is now finding it in the coal mine, the iron ores, the dense forests, the enduring waterfall, and a thousand sources of production which are in their utilization rounding into symmetry and giving volume and momentum to the grand whole of Virginia industry."

#### MANUFACTURES WITH AGRICULTURE.

"Pennsylvania had a later and slower settlement. She has no seacoast, and is almost destitute of natural water-ways and great aqueous basins for food-fish supplies. But Pennsylvania acted upon the true theory of industrial development—that it should be various and symmetrical, furnishing lucrative employment for male and female, old and young, indoors and in the open air, unskilled and rough, as well as nicely adjusted to the peculiar tastes and finer aptitudes of those who are suffering for something to do."

#### A COMPARISON.

"More than half of the people of Virginia," says the report, "are farmers; only one in five of the Pennsylvanians are engaged in agriculture. In Virginia the competition is between one farmer and another in the sale of produce for which there is no near market, and the cheapening of products also cheapens the acres on which they are grown. So Virginia farm lands are valued at \$10.89 per acre, while those of Pennsylvania command \$49.30. So says the census of 1880. It also says that the average farm worker of Virginia produces crops worth \$180, while the Pennsylvania agriculturist gets \$431, because of the other four mouths seeking to be filled and competing for the supply. These are not isolated examples."

#### THE VALUE OF LANDS.

The report says: "To test the value of this hypothesis, let us divide the States and Territories of the United States into four classes, the first having less than 30 per cent. of the population engaged in agriculture; the second, those with 30 to 50 per cent.; third, 50 to 70 per cent.; and fourth, those having 70 per cent. and upward."

The following is the result showing the value of lands:

Classes.	States and Territories.	Value of lands per acre.	Per cent. of workers in agriculture.
First.	15	\$98.65	18
Second.	13	90.55	49
Third.	18	18.53	58
Fourth.	6	5.18	77

#### THE INCOME OF THE FARMER.

The report, with some elaboration, then shows, from the census of 1880, that the owners of land find a great advantage in the increase of the proportion of non-agricultural population.

Taking the same classes as above, the report shows:

Classes.	Value of agricultural products per capita.

## Special Notices.

## RECENT BOOKS.

**Lockwood.** — *Electricity, Magnetism and Electric Telegraphy.* By Thomas D. Lockwood. 152 illustrations, 377 pages, 8vo, cloth; 1883. . . . . \$2.50

This new handbook of general information for electrical students, operators and inspectors is the work of an experienced electrician and an author well known by his previous work on the telephone. The book is in the form of question and answer, and at the outset presents a general review of the theory and practice of electricity and magnetism in such a form that the subjects discussed may be readily understood by those of limited education. The different methods of generating the electrical current, electro-magnets, batteries and machines are described and illustrated. The subject of Telegraphy is particularly and thoroughly treated upon. Under this head there are chapters on the different systems, with principles involved in each—line construction, subterranean and submarine conductors, office wires and fittings and instruments, adjustment and care of instruments, circuit faults and their localization, and multiple telegraphs. Considerable attention has also been bestowed upon the miscellaneous applications of electricity, such as electric lighting, electric bells and the telephone, and there are brief remarks upon the use of the current as applied to the relieving of pain (electro-therapeutics), electric clocks, blasting, alarms, &c.

**The State Roofer.** By D. Auld, Jr.; pocket size; 50 pages with 29 colored plates; 1883. . . . . \$1.00

It is not too much to say that this handy little volume is the best work on slate roofing that has been published. It begins with a discussion of the buildings which are adapted for receiving slate roofs, and considers the sizes of slates most suitable for roofing, together with rules for measuring slate roofing and directions for flashing and counter-flashing. Following this, a number of slate tables are given, arranged in convenient form for builders and roofers. Diagrams are included, showing the use of cut slate, and greatly facilitating the calculations necessary to be made in working slate into ornamental patterns, where both colored and cut slates are employed. These diagrams cover not only fancy patterns, but also letters and figures. Illustrations of a complete outfit of slater's tools are a feature of the book. Any builder, by a careful perusal of this book, may become familiar with the art of laying slate to the best advantage.

For Sale by

**DAVID WILLIAMS,**  
83 Reade St., New York.

## Copartnership.

No. 366 SOUTH FOURTH STREET, PHILADELPHIA, December 31, 1883.

In accordance with our Articles of Copartnership, the firm of

**BLAKELY & WALBAUM**

is this day dissolved in consequence of the death of Mr. Thomas Blakely.

The business will be continued by me under the style of

**W. H. WALBAUM & CO.,**  
on precisely the same basis as heretofore; that is to say, I shall continue to do a

**General Merchandise Brokerage**

business only, devoting special attention to

**METALS, IRON ORES, RAILROAD SUPPLIES AND FIRE-BrICK,**

continuing the Agencies for the North Lonsdale Iron and Steel Company's Bessemer and Malleable Pig Iron, and for Messrs. N. B. Allen & Co.'s Dinas Fire-Brick, as well as all the other foreign and domestic connections made by Blakely & Walbaum.

Requesting the favor of continuance of your valued support, I remain, dear sir, yours respectfully,

W. H. WALBAUM.

## REFERENCES BY PERMISSION:

Messrs. PETER WRIGHT & SONS, Philadelphia.

Messrs. JOHN B. ELLISON & SONS, Philadelphia.

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CHESTER ROLLING MILLS, Chester, Pa.

Messrs. CARNEGIE BR/S & CO., Limited, Pittsburgh and New York.

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DEALERS IN

**Ag'l Implements, Hardware, &c.,**  
TAMPA, FLORIDA.

**WANTED.**—A situation as Roll Turner by a No. 1 man, well acquainted with the manufacture of all shapes of Iron and Steel that can possibly be had. Rollers—Hoops, Band Iron, Sheets, &c. The best references in the States as to character and ability.

Address **A. F. KNOX,** 102 S. 10th St., New York.

## Special Notices.

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## ENGINES AND BOILERS.

One 20-in. Cyl. by 42 in. Str. & Corliss Engine.  
One 16-in. " 42 in. " " "  
One 12-in. " 42 in. " " "  
One 8-in. " 20-in. " " "  
One 10½-in. " 20-in. " " " Upright Engine.  
One 12-in. " 22-in. " " " Rider  
One 4-in. " 8-in. " " " Centrif.  
Two 6½-in. " 7-in. " " " (off.  
Hut-hinson & Alexander  
Supplied Steam Eng. Co.  
Diamond Drill Co.  
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One 10½-in. " 36-in. " " "  
Horizontal Engine.  
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One Engine Lathe, 20 ft. bed, 42 in. swing. New.	One	18	"	36	"
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	One	10	"	30	"
	One	14	"	30	"
	One	12	"	27	"
	One	10	"	27	"
	One	12	"	25	"
	One	10	"	25	"
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	One	10	"	19	"
	One	8	"	18	"
	Four	6	"	16	"
	Two	6	"	15	"
	One	5	"	15	"
One Iron Planer, plane 3 ft. long, 30 x 30 in. New.	One	7	"	26 x 26 in.	"
	One	4	"	25 x 22 in.	"
	One	12	"	35 x 25 in.	"
	One	9	"	36 x 26 in.	"
	One	9	"	27 x 27 in.	"
	One	9	"	30 x 30 in.	"
	One	7	"	30 x 30 in.	"
	Two	6	"	28 x 28 in.	"
	Two	4	"	30 x 18 in.	"
One Up'r Back geared Self-feed, 38 in. Drill. New.	One	7	"	30 in.	"
	One	6	"	26 in.	"
	One	5	"	25 in.	"
Four Large Upright Drills. Second-hand.	One	15	"	"	"
One Merriam Bolt Cutter. Cuts 2 in. Sec'd-hand.	One	18	"	"	"
Four Shaping Machines. 12 in. stroke. New.	One	8	"	"	"

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Have a large lot to close out at \$5.75 per dozen; complete with handles. Spot cash.

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Great Sale of Best Cotton Mill  
Site in Tennessee.

I will sell for cash, on Tuesday, January 29th, 1884, at the office of the Brownsville Cotton Mills, in Brownsville, Tenn., all their property, of every kind, consisting of 1 Corliss Engine, 80 H.P.; 2 large Boilers, 20 feet long; Heaters, Pumps, Lathe, 9 Looms, all the Shafting, Pulleys, and Hangers, all the Brick and great Smoketack, 31 1/2 Acres of Land, and so neat Cottages for operatives; all the Walls and Foundation of the Factory Building. No point in the South is more suitable for manufacturing than Brownsville. Capitalists are earnestly invited to be present. Only 65 miles from Memphis, on Louisville and Nashville Railroad, in the center of fine cotton lands.

J. A. ROGERS, President.

## FOR SALE.

Root Blowers, Nos. 1/2, 2, and 7; Baker do., No. 4 1/2; Sturtevant do., Nos. 0, 6, and 12; do., Exhausters, No. 2, 5, 12, 18, 24, 30, 36, 42, do., Foundry Castings; Baking Engine (Cot's make), 6 H.P.; do. order, \$35—a bargain; Vertical do., 24 x 5; Horizontal do., 1 x 6 and 2 x 2; a fine Pulley, 60 in. x 1 1/4, with 6 arms; do.; Hydraulic Press, 10 tons. All kinds of machinery bought and sold for partners out of town. C. R. BIGELOW, M. E., 12 New Church Street, New York City.

## Wanted to Trade.

\$2,000 worth of property, consisting of 15 Buildings. Lots in a village 1/2 miles from Chicago limits, 20 1/2 miles from Chicago. Court House—each lot 26 1/2 x 132 feet, unenclosed, for a stock of Hardware, Stores, &c., at Chicago jobbing rates. The Real Estate will pay to hold, and will stand investigation. A Stock in a Western town preferred.

Address "MERCHANT."

Office of The Iron Age, 36 &amp; 38 Clark St., Chicago, Ill.

## Hardware.

An excellent opportunity to purchase an interest in long and well established Wholesale House and paying concern.

Address

"OPPORTUNITY."

Office of The Iron Age, 13 W. 3d st., Cincinnati, O.

## Wanted.

Agents to sell Tubular Lantern Lighters every where. Fits all styles. Sells at 25 cents, 400 matches, 10 cents per box. Old styles made better than new. Hardware Commercial men please notice. Address C. H. TYLER,

P. O. Lock Box 529, 76 Beekman Street,

CHICAGO, ILL.

NEW YORK.

## Wanted.

Young man to Travel; one well acquainted with the Jobbing Hardware Trade of the United States. Address, with reference and salary required.

THE MORRIS SASH LOCK MFG. CO.,

Cincinnati, Ohio.

## Wanted.

Situation as Salesman, by one who has a good acquaintance with the Jobbing and Manufacturing Trades of Ohio in handling Steel, Iron, Cloth, Trimmings and General Carriage Hardware. Has represented Sweet's Manufacturing Company the past two years.

Address J. A. GREEN,

Care Sweet's Manufacturing Co.,

Syracuse, N. Y.

## Wanted.

an active, energetic young man, familiar with the Iron Trade, to represent in Boston house having agencies for Boiler Plate Steel, Sheet Iron &c. One acquainted with Boiler Manufacturers in New England preferred. Address, stating experience and salary expected.

"STEEL PLATE"—do.

Office of The Iron Age, 23 Read's st., New York.

## WANTED.

SITUATION WANTED.—To Superintend an Iron or Brass Manufact'ry. An iron branch, and have a good experience in business, and familiar with Machinery and Kerosene and Brass Works generally.

Address W. O. LINCOLN,

Box 329, Fairhaven, Mass.

## WANTED.

15 tons of 25 ft. Rail, second-hand. Must be in good condition, with Spikes Joints. Also one 35 H.P. Boiler. Upright. Address Philipburgh, Centre County, Pa.

## SITUATION WANTED.

Wholesale Hardware trade; 15 years' experience; Shipping, Receiving or Delivery Clerk. Callier or Checkers. Best references. G. W. LIBBY,

257 Second Ave., New York City.

WANTED—One or more First-class Agencies, and capable of development.

Address, with full particulars.

J. &amp; E.

Office of The Iron Age, 23 Read's Street, New York.

## Trade Report.

## BRITISH IRON AND METAL MARKETS.

[Special Cable Dispatch to The Iron Age.]

LONDON, WEDNESDAY, Jan. 9, 1884.

Scotch Pig.—The market is quiet, with unchanged quotations. We quote makers' prices as follows:

Coltness, alongside, Glasgow	55/
Langloan, " "	54/
Gartsherrie, " "	50/6
Summerlee, " "	52/6
Carnbroe, " "	51/6
Glengarnock, " Ardrossan	51/6
Eglinton, " "	45/6
Dalmellington, " "	48/
Shotts, " at Leith	54/

Lighterage from Ardrossan to Glasgow is 1/10 ton.

Cleveland Pig.—The market is a little weaker. We quote as follows, f.o.b. shipping ports:

Middlesboro' No. 1 Foundry	40/
No. 2	38/
No. 3	35/6
No. 4 Forge	34/6

Bessemer Pig—Is a little steadier. W. C. Hematites are quoted 46/6 @ 47/ for mixed lots, Nos. 1, 2 and 3, equal parts, f.o.b. shipping ports.

Manufactured Iron.—The market continues irregular. We quote at works:

	£ s. d.	£ s. d.	
Staff. Ord. Marked Bars	7	10	0 @
" Medium	6	5	0 @ 6
" Common	6	0	0 @ 6
Hoops, 20 W. G. and over.			
" Common Best	7	0	0 @ 7
" Medium	6	5	0 @ 8
" Common	6	10	0 @
Sheets, 20 W. G. and under.			
" Ordinary Best	8	15	0 @ 9
" Common	8	0	0 @ 8
Welsh Bars			
"	5	6	

Steel Rails.—The market is quiet and prices are steady. We quote Ordinary Sections £4. 7/6 @ £4. 12/6, f.o.b. shipping ports.

Old Rails.—The market is quiet and quotations are without change. We quote Old D. H. S., £3. 10/ @ £3. 12/6, c.i.f. New York.

Scrap—Is irregular and quotations are lower. We quote Heavy Wrought, c.i.f. New York, £2. 17/6 @ £3. 2/6; Bessemer Crop Ends, run of the mill, are quoted 60/- f.o.b. shipping ports.

Copper.—The market is a little steadier. We quote Best Selected, £64 @ £65, and Chili Bars, £57. 10/ @ £57. 15/.

Tin.—The market is irregular and quotations are some £2 lower than last week. We quote Straits, Ingots, spot, £82. 10/ @ £83, and futures, £83. 10/ @ £84.

Tin Plates—Are a little weaker. We quote:

Tin Plates, 10 x 14, 1st qual. Charcoal.	10/6 @ 21/6
" 2d	15/6 @ 22/6
" 1st Coke	17/6 @ 23/6
" 2d Coke	15/6 @ 21/6

Spelter—Is quiet. We quote Ordinary, at shipping ports, £15 @ £15. 7/6.

Lead—Is steady. We quote Common Eng. Pig, £12 @ £12. 5/-.

Freights.—Steam from Glasgow to New York, 3/6; Liverpool to New York, 4/; Liverpool to Philadelphia, 5/ @ 6/6, and London to New York, 7/6 @ 9/6.

TRADE AND FINANCE.

Office of The Iron Age, WEDNESDAY EVENING, Jan. 9, 1884.

The new year opens more hopefully, but is not unclouded. Taken together, in the departments of manufacture, trade and finance, commercial affairs are much less active than one year ago. Production is much restricted, foreshadowing a diminished volume of business in the coming months, and prices, though a little better in some particulars, are far from satisfactory.

As a consequence, the number of business failures, especially among traders of small capital, continues undiminished. Bradstreet's reports 252 failures during the past week—22 more than the preceding week, 25 more than the corresponding week of 1883 and 130 more than the same week of 1882.

It is to be observed, however, that in proportion to the number doing business now and one year ago the increase is very trifling. As remarked by good financial authority, "The Eastern and Pacific States are the only sections where the percentage has increased to any considerable extent and in the latter of these it is much less than in 1879." Perhaps the most discouraging feature is the extent to which speculators have obtained control of our principal agricultural staples, aided by the cheapness of money, forcing up prices abnormally, far beyond exporters' limits. Thus we are confronted by the spectacle of an enormous accumulation of grain, amounting to no less than 35,500,000 bushels of wheat alone, an amount some 15,000,000 bushels in excess compared with one year ago, while the fleet of Transatlantic shipping is being reduced for want of employment and railway companies are compelled to cut rates on east-bound grain 33 1/3, or, more exactly stated, from 30 to 20¢ per 100 lb. Even at this reduction it is not certain that they will induce heavy shipments before the resumption of navigation.

Wholesale Hardware trade; 15 years' experience; Shipping

ages, but consider charging for original packages, for which they pay nothing, as a base imposition. As for dray, I think if the retailer pays exchange on his remittance, it should offset the same.

KANSAS RETAILER. As appears by the following list, the prices of

## CORDAGE

have been revised, under date of January 2, 1884, with a reduction of  $\frac{1}{2}$  cent per pound on Manila. The list revised is given below, there being a discount of 1 cent per pound allowed the trade:

## Manila Rope.

	Cts. per lb.
1/4 inch cir. and upward.	15 1/2
1/2 thread, or 3/8 inch diameter	19
6 & 9 thread, or 3/4 and 5-1/2 inch diameter	16 1/2
Hay Rope, 2, 3, 4 or 5 thread	17
Boat and Point Rope.	15 1/2
Tarred Rope and Lath Yarn.	15
Stave, Leather and Hop Twine.	16
Sisal Rope.	
White Rope.	17
Tarred Rope and Rattine.	11
Spin Yarn.	10
Hay Rope.	10 1/2
Marline, Houseline, Rounding and Hambro-line.	12
Packing.	15
American Hemp.	16
White Rope.	17
Tarred Rope and Rattine.	11
Lath Yarn.	12
Packing.	12
Marline, Houseline, Rounding and Hambro-line.	17
Sash and Bell Cord.	16
Italian Hemp.	25 to 35
Tarred Rope.	20
Jute.	16
Rope and Packing.	8
Best Oakum.	9
U. S. Navy.	8
Navy.	9 1/2

## SCREWS.

Since our last report the market has been unsettled. Several companies have issued circulars at discount to per cent., which is now the regular price, but concessions are made on special orders.

## CARTRIDGES.

The new arrangement on Cartridges is working smoothly, and we hear of satisfaction in the trade with the new lists and discounts, and with the effort which has been made to put this branch of manufacture on a more profitable basis. It is hoped that the agreements as to prices and terms will be faithfully adhered to. The recognized wisdom and ability of Charles Taylor, the commissioner and secretary of the association, will do much to secure this result.

## BRASS KETTLES.

The following manufacturers have agreed upon prices for Brass Kettles: Waterbury Brass Company, Brown & Bros., Edward Miller & Co., C. G. Hussey & Co., Ansonia Brass and Copper Company. The prices are as follows:

17 inches and under. \$12.00

18 inches and over. \$12.50

A discount of 10 and 5 per cent. will be allowed to the purchaser of 500 pounds and upward at one time. Interest will be charged on all purchases not paid for within 30 days from date of invoice. These prices are subject to change without notice, and no deductions will be made for stock in hands of purchaser when change in price is made.

## SCALES.

The New York Standard Scale Company, for whom T. W. Williams, 46 Murray street, is agent, are offering, as will be seen by their advertisement on another page, the "Ulster" Union Scale, which is put on the market as a specially good article for a moderate price. These Scales are described as made extra strong, with iron ribs under each platform, containing about 4 pounds more of metal than the general line of Union Scales. They are packed with Spanish or French weight for export trade, on which, as on the other goods of this company, there are special rates. The regular prices are as per the following list, subject to a discount of 10 per cent.

## With Tin Scoop.

244 lb. Plain Black, all steel bearings, each. \$2.85  
244 lb. Striped. " " " 2.96  
244 lb. Red. " " " 3.10

We also give below the list on their Even Balance Scales, from which there is also a discount of 10 per cent.

## No. 2, 4 lb. Plain Japanned.

No. 3, 4 lb. Japanned and Striped. \$13.50  
No. 3, 4 lb. Fancy Red Striped. 14.50  
No. 2, 8 lb. Plain Japanned. 15.00  
No. 2, 8 lb. Japanned and Striped. 27.00  
No. 2, 8 lb. Fancy Red Striped. 30.00  
33.00

We would direct the attention of our readers to the special notice in another column, in which an important property at Brownsville, Tenn., 56 miles from Memphis, is offered for sale on 29th inst. The site is spoken of as one specially suitable for the erection of a large cotton mill, and the matter is commended to the attention of capitalists.

A revised list has been issued by the INTERCHANGEABLE TOOL COMPANY, manufacturers of Hall's Patent Compound Lever Nippers and Pliers, for the sale of which Wiebusch & Hilger Hardware Company, 84 and 86 Chambers street, are sole agents. The list prices on Nippers and Pliers remain unaltered, the revision affecting the list on Parts, which has been advanced so as to make the same discount on these as on the goods, the trade experiencing some inconvenience in having the discounts different. This alteration in list leaves the price as before, the regular discount to the

retail trade remaining 25 per cent. We append the complete list as revised:

## Hall's Patent Cutting Nippers.

	Per doz.
No. 1, Size 4 inch, Cuts 1-10 inch wire.	\$12.00
" 2, " 5 " 3-32 "	12.00
" 4, " 7 " 3-26 "	21.00
" 6, " 8 " 3-16 "	30.00

Nickel Plated.

	Per doz.
No. 1, Size 4 inch.	\$15.50
" 2, " 5 " 3-32 "	17.50
" 4, " 7 " 3-26 "	27.00
" 6, " 8 " 3-16 "	39.00

## Extra Parts for Nippers.

	Per doz.
No. 1, for Size 4 inch.	\$2.35
" 2, " 5 " 3-32 "	3.35
" 4, " 7 " 3-26 "	5.00
" 6, " 8 " 3-16 "	6.00

## Extra Jaws—Nickel Plated.

	Per doz.
No. 1, for Size 4 inch.	\$4.50
" 2, " 5 " 3-32 "	4.50
" 4, " 7 " 3-26 "	5.00
" 6, " 8 " 3-16 "	5.00

## Extra Handles.

	Per doz.
No. 1, for Size 4 inch.	\$2.35
" 2, " 5 " 3-32 "	3.35
" 4, " 7 " 3-26 "	5.00
" 6, " 8 " 3-16 "	6.00

## Hall's Patent Cutting Pliers.

	Per doz.
No. 3, Size 6 inch, cuts 3-32-inch wire.	\$17.50
No. 5, " 8 " 3-16 "	25.00
No. 7, " 9 " 3-16 "	31.00

## Extra Parts for Pliers.

	Per doz.
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## Extra Jaws.

	Per doz.
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## Extra Handles.

	Per doz.
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## Hall's Patent Cutting Pliers.

	Per doz.
--	----------

## Extra Jaws—Nickel Plated.

	Per doz.
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## Extra Handles.

	Per doz.
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## Hall's Patent Cutting Pliers.

	Per doz.
--	----------

## Extra Jaws.

	Per doz.
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## Extra Handles.

	Per doz.






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continued patronage of our friends of the past is solicited. Very respectfully,

HUSSEY, BINS & CO., LIMITED.

C. C. HUSSEY, Chairman.

E. A. BARNES, Sec'y and Treas.

Pelham Anderson has just opened business in Montgomery, Ala., as dealer in Builders' Supplies and Agricultural Implements, and thus refers to some of the certainly unique advantages he possesses in this enterprise: "Having resided in Montgomery continuously for more than 26 years past, practising as an architect and builder, and as Register of the United States Land Office for 13 years, and having a large acquaintance in this section of the State, particularly with builders, mechanics and farmers, together with the fact that I do business in my own store, besides owning other valuable property, and have three sons to assist in the conduct of my business, I feel satisfied I have a solid foundation on which to build up a prosperous business." Mr. Pelham would be pleased to receive catalogues, trade lists, &c., from manufacturers and importers of goods in these lines.

As we reminded our readers several weeks ago, in the suit of the

HUNTER SIFTER MANUFACTURING COMPANY against the Specialty Manufacturing Company, in the United States District Court of the Southern District of Ohio, a final decree was granted perpetually enjoining the latter company and their agents from making, selling or using the Sifters which were the subject of the litigation. Since that time the Specialty Manufacturing Company have acknowledged their defeat, and turned over their stock, tools and machines to the Hunter Sifter Manufacturing Company, who, in a circular to the trade, define their position in this way: "We give you fair warning that if there is any justice to be found, we shall use it, and protect our rights whenever infringed. We now own and control six different patents on Flour and Meal Sifters, covering all the points in our Sifters. We do not court litigation, but we shall enter into and continue it to the bitter end, if necessary, to protect our patents and business."

The Morris Sash Lock Manufacturing Company, of Cincinnati, desire us to say that Donald McKay, Jr., is not now connected with their house, and that his successor, as their traveling salesman, will soon call upon their customers. Mr. McKay, we learn, has formed a connection with the Kempshall Manufacturing Company, of New Britain, in which he has become a stockholder, and in whose interest he will travel as salesman.

The Stearns Manufacturing Company, of Grand Haven, Mich., and the Sandwich Enterprise Company, of Sandwich, Ill., have issued a joint circular letter, in which they advise their friends and customers that the Stearns Manufacturing Company have disposed of their business and patents in the manufacture of the "Regulator" Windmill to the Sandwich Enterprise Company, who will be prepared soon to fill all orders promptly. As many of the patterns used in the manufacture of the Windmill were destroyed in the fire that consumed the works of the Stearns Manufacturing Company, it will require a little time to replace them and get a stock of Mills ahead, but it is anticipated that there will be little delay in filling orders.

T. P. Burke, 100 Chambers street, late of the firm of Dodman & Burke, has been appointed the representative of the following factories:

Saranac Horse Nail Company, Saranac and Snowden Nails.

Cincinnati Barb Wire Fence Company, Galvanized and Painted Wire.

Chadborn & Coldwell Manufacturing Company, Excelsior and Clipper Lawn Mowers, Cobb Iron and Nail Company, Cut Nails and Spikes.

Schreman & Hagar, Hatchets and Boys' Axes.

Mosler Manufacturing Company, Wheelbarrows and Trucks of all descriptions.

Lake Erie Iron Company, Carriage Tire Machine, Plow and Skein Bolts, Nuts, Washers, &c.

Trenton Rubber Works, Rubber Belting, &c.

Nashville Spoke and Handle Company, manufacturers of Spokes, Handles, &c.

In this connection we may mention that Mr. James Surpless, who remains with Mr. Burke, will attend to the export and New York trade as heretofore.

#### MISCELLANEOUS.

The attention of the trade is called to the advertisement on another page of Dame, Stoddard & Kendall, Boston, giving seasonable prominence to the Fishing Tackle department of their business.

Attention is directed to the "Special Notice" on another page, which announces a desire to trade property near Chicago for a stock of Hardware, Stoves, &c., at Chicago jobbing rates. It is said that the real estate offered will pay to hold and will stand investigation. The matter is worth looking into by those who desire such an exchange.

#### CALENDARS, ETC.

The Cleveland Block Company, of Cleveland, Ohio, have issued a very tasty calendar for the present year, which in a pleasing engraving represents their Blocks in use on shipboard in hoisting a sail, which bears the date 1884. Under this is the monthly calendar, neatly printed.

A very neat New Year's greeting has been sent out to their customers and friends in

the trade by Peavey Bros., Sioux City, Iowa. The first page under a fine engraving tenderers their compliments, and the second contains an address to the trade, from which we make this extract:

The year 1883 to Hardware merchants, and to those directly or indirectly connected with Iron interests, has been one full of events long to be remembered. Disasters to the Iron interests throughout the world began with the commencement of the year—heavy iron failures, blowing out of furnaces, and some of the largest mills in the country running on half time, and in many cases shutting down entirely; hence a gradual depreciation of all Hardware goods has taken place, and it is fortunate for the country at large that depreciations in values have been so gradual. For this reason alone merchants have been able to dispose of their goods; while at small margins, it has been done without loss. It has been very noticeable that the failures for the year have been mainly among the larger class of trade, and invariably their troubles have been brought about by "speculation" and doing too much business for their capital. We can only account for the averting of more serious business calamities by the general prosperity the entire country has enjoyed for the past few years. However, we are of the opinion (while we see nothing panicky ahead) that now is a good time to commence running close to shore. Indications point toward complications in important public matters, a stringent money market, and the question of tariff on our foreign imports is a matter well deserving the most serious thought, being one of vital importance to all "American industries." For these reasons and others we think the prudent and far-seeing business man will for the next year or two curtail his expenses, decrease his indebtedness, buy his goods as he wants them, confine his attention to his legitimate business, and take no undue risks, for general prosperity, commonly called "booms," will, as it always has at regular periods, come on us again. Then will the man who has followed "caution" find good use for his surplus funds and reap all benefits from an advancing market, because he will be in a position to take advantage of them.

#### IRON.

**American Pig.**—The demand for Foundry Irons is confined to small lots intended for immediate consumption. Business is very quiet, and, while there is enough doing to keep sellers in heart, nobody anticipates any immediate increase. Inquiries are numerous, but seem to be made for the purpose of testing the market rather than to make a basis for negotiations. Buyers are evidently

waiting to see what the tendency of prices is going to be before placing any considerable orders. Among manufacturers there is a disposition to curtail production still further if prices do not improve. A drop of \$1 per ton would probably cause many furnace owners to blow out their furnaces, who are now barely meeting cost and are producing Iron only for the sake of holding their trade until an improvement sets in. If, however, prices are maintained at present rates for a month, it is expected that buyers will place sufficient confidence in the maintenance of values to purchase more freely. There is very little demand in this market for Forge Irons, and we hear of stocks accumulating.

Manufacturers are generally unable to realize cost on this grade at present quotations, and they prefer to await developments rather than to force prices still lower by holding out inducements to purchasers. We are reported a sale of 5000 tons of Bessemer on private terms. We quote general selling prices as follows: No. 1 Foundry, \$20 @ \$21 at tidewater, with sales of special brands or retail lots at various prices up to \$22; No. 2 Foundry, \$19 @ \$20 at tidewater; Gray Forge, \$16.50 @ \$17.50 at furnace, equal to \$17.50 @ \$18.75 delivered.

**Scotch Pig.**—A considerable quantity has been sold for forward delivery by some dealers, but most importing houses are doing very little business. Arrivals have not been large, and, as usual, nearly all had been sold previously. The condition of this branch of trade has been so unsatisfactory

for the past quarter that the number of houses engaged in it has been very greatly reduced, and some of them even now only hold small lots in store, receiving no fresh shipments. Nominal quotations are as follows: Carnbroe, \$21 from ship and \$22 from store; Coltness, \$22.25 to arrive and from ship; Shotts, \$22.25 from ship; Glengarnock, \$21 from ship and \$22 from store; Gartsherrie, \$22.50 from yard; Langloan, \$22.50 from ship; Summerlee, \$22 to arrive and from ship; Dalmellington, \$20 @ \$20.25 to arrive and \$21 from ship; Eglinton, \$20 to arrive.

**English Bessemer Pig.**—We hear of very low offers having been made, said to be \$19.50 ex ship. Sellers generally deny having made such low quotations, but intimate that sales might be made at about \$20. The demand is light.

**Spiegeleisen.**—A sale of 2000 tons is reported at \$28.50. Inquiries are numerous.

**Bar Iron.**—No improvement in business can be noted. About the same conditions prevail as those alluded to last week. Inquiries are rather more abundant than they were, but actual sales are light. The Burden

Iron Company reduced their prices on the 4th inst., and now name 2.7¢ from store as the base price for their "H. B. & S." brand, and 3.1¢ from store as the base price for their "Burden's Best" brand. Prices of other Irons have not been reduced, and sellers claim that they are firmly held. Store trade is about as usual, with nothing to indicate any early improvement in the de-

mand. We quote local prices for Bar Iron as follows: Best Refined, 1.85¢ @ 2.1¢, at mill, and 2.2¢ @ 2.3¢ from store; Common Iron, 1.7¢ @ 1.75¢ at mill, and 2¢ @ 2.1¢ from store.

**Structural and Shaped Iron.**—There is business in sight, but at present the movement is very limited. We quote local prices as follows: Beams, 3.5¢ on wharf for round lots; Angles, 2.4¢ @ 2.6¢ from store; Tees, 3.2¢ @ 3.5¢ from store.

**Plate Iron.**—Some good-sized orders have been placed during the past week, but at very unsatisfactory prices to sellers. Rates are now so low that it is considered improbable they can be forced any lower. Nominal prices are as follows: Common or Tank, 2.4¢ @ 2.6¢; Refined, 2.7¢ @ 2.75¢; Shell, 3¢; Flange, 3.4¢ @ 4¢; Extra Flange, 4.5¢ @ 5¢.

**Sheet Iron.**—Dealers report very little actual business, but signs of life are more apparent than they have been for some little time. We make no change in quotations, but prices are in buyers' favor, and concessions are made rather than lose a customer. For Nos. 10 to 16 we quote 3¢ @ 3.2¢. Lighter sizes are quoted in our New York Wholesale Price List.

**Steel.**—Business is still without animation, and concessions are being made quite freely to induce purchases. Our quotations are therefore altogether nominal. We quote American Tool Steel at 11¢, with a concession to large buyers; Crucible Machinery, 6.5¢ @ 7¢; Bessemer and Open-hearth Machinery, 3.4¢ @ 4¢; Toe-calk, 3.4¢ @ 3.6¢; Sleigh-shoe, 2.4¢; Boiler Plates, 4.5¢ @ 5.5¢, with extra for special sizes; Engine Tool, 15.5¢.

**Wire Rods.**—Sales of small lots of Steel Rods have been made, and inquiries are becoming more frequent from large buyers. We quote \$45 @ \$46, according to the size of the order.

**Steel Rails.**—No business of importance has transpired during the past week, but negotiations are in progress for large lots. A very prominent Steel-Rail manufacturer says that never on the 1st of January had so many Rails been contracted for as now, in proportion to the capacity of the mills, of course excluding the works now idle or not running on Rails. Makers are, therefore, asking better figures than those which were accepted a fortnight ago. Eastern mills are on December 1. Their production in December aggregated 29,770 tons, against 29,494 tons in November.

The following is a condensation of the report of stocks on hand at the close of the year in the United States bonded warehouses at New York, Boston, Philadelphia, Baltimore and New Orleans, compared with the stocks at previous dates:

Limited, Beaver Falls, Pa. (see advertisement, page 26), for the Middle and Southern States, and shall be pleased to furnish prices and catalogue on application for all kinds of Bessemer Soft Steel.

Yours very respectfully,  
PAGE, DENNIS & CO.,  
New York.

PAGE, MIDDLETON & CO.,  
Philadelphia and Baltimore.

#### IMPORTS

*Of Hardware, Iron, Steel and Metals into the Port of New York, for the week ending Jan. 9, 1884.*

##### Hardware.

Boker, Hermann & Co.  
Hdw., cutlery and  
Coddings, pkgs., 70  
Mach'y, cs., 206  
Castle S. A. & Co.  
Cases, 3

Dreyfus, Weiller & Co.  
Cases, 4

Fleid Alfred & Co.  
Cutlery, cs., 13

Chains, cks., 13

Gerdan Otto,  
Bales, 111  
Bundles, 38

Godfrey C. J.  
Guns, cs., 6

Hensel, lot, 1

Mach'y, pkgs., 2

Hildick A. H.  
Cask, 1

Chain piece, 1

Joerex J. W.  
Mach'y, pkgs., 2

Meyer & Co. Rob.  
Mach'y, case, 1

Moyer & Sons J. P.  
Guns, cs., 6

Moore Jas.  
Engine and boiler, 1

Files, case, 1

Newall U. Mill Co.  
Mach'y, pes. and  
pkgs., 6

Pini, Forwood & Co.  
Iron articles, cs., 2

Richard C. B. & Co.  
Cases, 2

Schoenfeld, Daly &  
Gates

Mach'e, cs., 4

Steinhardt Bros.  
Cases, 8

Taylor Thos.  
Mach'e, cs., 4

Wlebusch, Hilger & Co.  
Cutlery, pkgs., 23

Ironware, cks., 11

White John G. & Bros.  
Needles, case, 1

Cutlery, cs., 14

Guns, cs., 5

Order

Cases, 15

Mach'y for Canada,  
cs., 3

Hdw. for Canada,  
case, 1

Mach'y, cs., 9

Cutlery, case, 1

*Steel.*  
Abbott Jere. & Co.  
Steelware in colls.  
bds., 72

Bundles, 27

Collins L. E.  
Blooms, 250

Duval H. R.  
Plates, 409

Kidston A. T. & Co.  
Plates, 721

Lundberg Gust.  
Bessemer Ingots,  
pes., 19

Moss F. W.  
Bundles, 45

Bars, 8

Naylor & Co.  
Spring leaf, tons, 250

Noel Aug.  
Tires, cs., 5

Plock & Co.  
Car wheels, 47

Thurber H. K. & F. B.  
Leaf spring, tons, 200

Wagner W. F.  
Bundles, 205

Bars, 41

Cases, 5

Order

Billets, 247

Bands, 330

Forgings, 4

Bars, 3

Picks, 2

Plates for Canada, 19

Bundles, 42

Casks, 30

Cases, 13

*Metal.*

Alexander F. & Co.  
Shot, cs., 13

Quan.	Val.	Quan.	Val.		
Nails, kegs...	206	\$721	Cutlery, case...	140	\$2,815
Pumps, pkgs...	3	180	Nails, kegs...	69	1,491
Valves, ...	5	276	Sew. ma. cs...	81	2,035
Clocks, pkgs...	7	117	Nails, kegs...	57	176
Locomotive...	1	6,903	Brass, f.d. case...	1	54
W. mill, pkgs...	7	277	Forges, ca...	3	108
W. metal, pkgs...	5	85	Cartridges, ca...	7	110
Mt. iron, pkgs...	19	2,529	Water wheel...	1	192
Hdw. pkgs...	142	839			
Plumb. matl...	18	822			
Tin plates, cse...	1	60			
Ag. imp., pkgs...	10	338			
Br. goods, cs...	2	63			
Nails, bxs...	52	732			
Scales, kegs...	1	74			
Wire, cloth, bales...	2	102			
W. cloths, cs...	3	50			

## Porto Rico.

Quan.	Val.	Quan.	Val.
Ptln. gals...	11,820	1,804	
Mach'y, pkgs...	34	438	
Hdw. pkgs...	11	1,960	
Scales, cs...	5	82	
Nails, kegs...	218	598	
Shoe, cs...	10	40	

## Venezuela.

Quan.	Val.	Quan.	Val.
Hdw. pkgs...	38	410	
Pump...	1	60	
Clocks, cs...	1	142	
Mach'y, pkgs...	620	1,916	
Plumb. matl...	560	710	
Cutlery, cs...	26	528	
Scales, cs...	8	75	
Boiler, cse...	1	27	
Locomotive...	1	6,870	
Mt. iron, pkgs...	53	611	
Bolters...	2	1,450	

## Santa Domingo.

Quan.	Val.	Quan.	Val.
Ptln. gals...	5,900	680	
Hdw. pkgs...	31	938	
Mt. iron, pkgs...	61	593	
Plumb. matl...	3	457	

## Brazil.

Quan.	Val.	Quan.	Val.
Ptln. gals...	191,184	18,573	
Fire crackers, pkgs...	472	2,675	
Cot. gins, cs...	6	400	
Irons, cs...	200	1,945	
Mt. iron, pkgs...	23	780	
Cutlery, cs...	18	600	
Ag. imp., pkgs...	24	873	
Hdw. pkgs...	141	1,160	

## Greece.

Quan.	Val.	Quan.	Val.
Ptln. gals...	135,210	12,920	
Naples.			
Mach'y, pkgs...	2	68	

## Lissinipicceo.

Quan.	Val.	Quan.	Val.
Ptln. gals...	449,993	37,450	
Mexico.			

## Chile.

Quan.	Val.	Quan.	Val.
Mch'y, pkgs...	6	282	
Rifles, cs...	2	210	
Mch'y, pkgs...	12	2,861	
Revolvers, cs...	2	1,156	
Nails, kegs...	35	445	
Mrs. cop. cse...	1	29	
Nails, bxs...	11	92	
Iron safe...	1	45	
Clock, pkgs...	1	110	
Jacks...	20	266	

## Argentina Republic.

Quan.	Val.	Quan.	Val.
Ptln. gals...	191,184	18,573	
Fire crackers, pkgs...	472	2,675	
Cot. gins, cs...	6	400	
Irons, cs...	200	1,945	
Mt. iron, pkgs...	23	780	
Cutlery, cs...	18	600	
Ag. imp., pkgs...	24	873	
Hdw. pkgs...	141	1,160	

## French West Indies.

Quan.	Val.	Quan.	Val.
Ptln. gals...	1,910	250	
Pumps, bxs...	5	250	
Ptln. gals...	5,000	500	
Sew. ma. cs...	3	200	

## Africa.

Quan.	Val.	Quan.	Val.
Ptln. gals...	10,700	10,720	
Mf. iron, pkgs...	1	15	
Hdw. cs...	2	20	

## COAL.

Quan.	Val.	Quan.	Val.
The Anthracite trade report an improved market, the consumption of Coal during the past few days having been very large. The half-time arrangement in working the mines until April 1 has had the effect to stiffen prices, some sizes of Coal having run very short, while others are in good supply. As manufacturers consume regardless of the supply, this class are most liable to find themselves on short allowance. The Pennsylvania Coal Company have advanced prices 10¢ per ton since January 1, and others in several instances are 5¢ per ton higher. Lehigh Valley quotations are advanced 15¢ @ 25¢, as follows: Lump, \$5.25; Broken and Egg, \$4.15; Stove, \$4.25; Chestnut, \$4.15; Pea, \$2.90. The outlook for the coming year is considered very fair.			
Bituminous Coals are quiet, at the lowest figures. No strikes in this trade are probable, at least for the present.			
The receipts of Anthracite at Boston last year were 754,295 tons from New York, an increase of 26,691 tons, and 968,347 tons from Philadelphia, a decrease of 57,245 tons. Total, 1,722,642 tons, a decrease of 30,554 tons.			

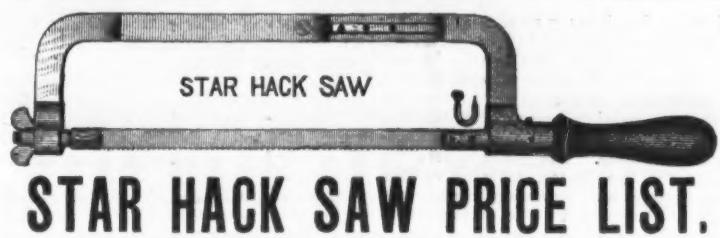
## OLD METALS, PAPER STOCK, &amp;c.

Prices unchanged, remaining the same as for several weeks past.

## FOREIGN TRADE MOVEMENTS.

The following shows the imports of hardware and metals at the port for the last week, also for the year 1883:

YEAR.	Pkgs.	Value.
1883	50	\$2,928
1882	84	8,924
1881	16	1,675
1880	16	2,072
1879	15	1,581
1878	111	17,588
1877	15	1,387
1876	2,873	46,728
1875	28	2,061
1874	2,477	2,843
1873	6	49
1872	11	220
1871	5	100
1870	25	



## STAR HACK SAW PRICE LIST.

### PRICE OF BLADES.

Length of Blade.....	6 inch.	7 inch.	8 inch.	9 inch.
Price per Dozen Blades.....	55	60	65	70 cents.

### PRICE OF STEEL FRAMES PER DOZEN.

No. 1 Extension Frame, Polished and Nickel Plated, per Dozen.....	\$9.60
" 2 Solid.....	8.40

These frames are all made of steel, and, as seen in the cut, are all adjustable so as to face the blade in four different directions. The extension frames will hold the four different lengths of blades. The solid frames only hold the 8-inch blades, this being the length most in use; they all have the patent staple-shaped pins to hold the blades in the frame, which are so arranged that they cannot fall out. We say that the Star Hack Saw is 100 per cent. better than any other kind in use. If, on a fair trial, it is found that one dozen of our Saws will not cut as much as two dozen of any other kind, we hereby authorize all dealers to return what they may have in stock, at our expense. Now, if our competitors have the same faith in their saws, let them make the same offer, so that Dealers may unload what they don't want, and sell only the best, whichever one it proves to be.

## MILLERS FALLS CO.,

74 Chambers Street, - NEW YORK.



## BONNEY VISE AND TOOL CO., Limited,

MANUFACTURERS OF

## Bonney's Pat. Vises, Machinists' Tools and Hardware Specialties.

OFFICE AND WORKS:

3015 CHESTNUT ST., PHILADELPHIA, PA.

As an evidence of the popularity of Bonney's Patent Vises, we have sold over 300,000 of them within the past four years, and the demand is still increasing.



Machine Screw Taps.  
LIGHTNING

WILEY & RUSSELL MFG. CO.,  
MANUFACTURERS OF  
Labor-Saving Machinery and Tools,  
GREENFIELD, MASS.

SEND FOR PRICE LIST.

## VARIETY IRON WORKS.

### ALFRED C. REX & CO.,

MANUFACTURERS OF

## Hardware Specialties, Iron Toys, Novelties,

AND -

### HOUSE-FURNISHING HARDWARE.

Main Office and Factory, FRANKFORD, PHILADELPHIA.

Philadelphia Sample Office, 415 COMMENCE STREET. New York Branch Office, 128 CHAMBERS STREET.

BRAMBALL & SPIER, Managers.

Spring Specialties—Lemon Squeezers, Steel Ice Tools, Steel Blade Hatchets and Axes, Egg Beaters and Cake Mixers. Send for Catalogue.

## S. CHENEY & SON, MANLIUS, N. Y.

MANUFACTURERS OF LIGHT AND MEDIUM WEIGHT

## GRAY IRON CASTINGS

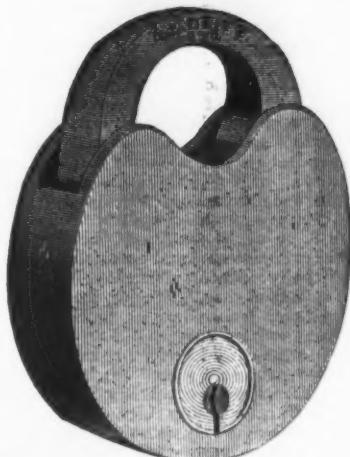
METAL PATTERN MAKERS AND JAPANNERS.

Correspondence solicited.

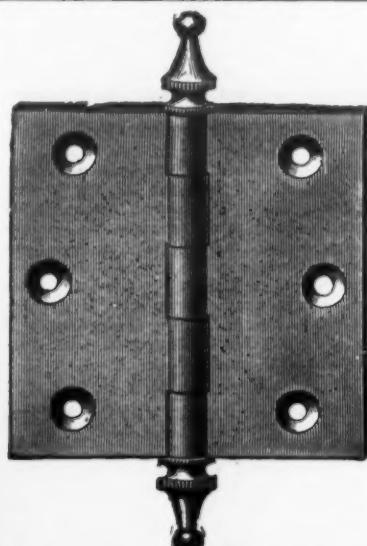


CLARK & COWLES.

## A. E. DEITZ.



DURRIE & McCARTY, Agents,  
97 Chambers & 81 Reade Sts., New York.



## CAST BRASS BUTT HINGES,

Polished and Plain Finish,

Manufactured and kept in stock by

W. & J. TIEBOUT,

Manufacturers of

BRASS, GALVANIZED & SHIP CHANDLERY

## HARDWARE,

Nos. 18 & 18 Chambers St.,

NEW YORK.

NEW YORK STANDARD SCALE CO.,



MANUFACTURERS OF

THE CELEBRATED

## "Ulster" Union Scale.

Acknowledged by the trade to be the most durable all-steel (cheap) Union Scale ever produced.

MANUFACTORY, KINGSTON, N. Y.

OFFICE AND SALESROOM, 46 MURRAY ST. NEW YORK.

T. W. WILLIAMS, Agent.

Send for our Descriptive Catalogue.

PITTSBURGH BELLOWS WORKS.

WM. FLACCUS & SON,

PITTSBURGH, PA.

Manufacture Every Variety and All Sizes of

BLACKSMITH BELLOWS.

Superior Quality, covered with own make best

Oak-Tanned Leather.

## PAT. GAS GENERATOR

makes gas for heating and illuminating perfectly safe. No smoke; steady flame; one-tenth cost of coal gas. Burners will burn on any kind of gas.

No extra insurance. Has been used in large tanks and canning works over two years with greatest success. Can guarantee perfect satisfaction. Prices reasonable. Send for Circulars and Price List.

NATIONAL GAS & MFG. CO., CLEVELAND, OHIO.

P.W. Gallaudet



Cor. Broadway and West Sts., New York.

Bankers and dealers in COMMERCIAL PAPER.

Stocks and Bonds dealt in for cash or on margin at

New York Stock Exchange.

TINIUS OLSEN & CO.,

## STANDARD SCALES

AND

## Testing Machines.

Manufacturers of all descriptions of Testing Machines. Tests made daily.

Office and Works, N. W. cor. 19th and

Butterfield Sts., Philadelphia.

## L. COES'

Genuine and Mechanics

### PATENT

## Screw Wrenches

MANUFACTURED BY

L. COES & CO.,

Worcester, Mass.

ESTABLISHED IN 1839.

REGD. U. S. TRADE MARK.

REGD. MAR. 21, 1876.

Our Genuine Wrenches are made with

straight bars, full width and enlarged jaw, having ribs cast inside, which strengthen the jaw and give a full bearing on front of bar. These improvements, in combination with our new ferrule, made with double bearings, an iron tube, fitted to the shank and resting against the lower bearing, rigidly held in position by the handle and nut, effectively preventing back turn of handle. See sectional view, verify our claim that we manufacture the heaviest and strongest Wrench in the market. None genuine unless stamped.

L. COES & CO.,

Worcester, Mass.

Warehouse,

97 Chambers and 81 Reade Sts.

NEW YORK.

DURRIE & McCARTY,

Sole Agents.

## LLOYD & SUPPLEE HARDWARE CO.,

SUCCESSORS TO LLOYD, SUPPLEE & WALTON,

625 Market and 616 Commerce Street, Philadelphia,

MANUFACTURERS AND WHOLESALE DEALERS IN

## AMERICAN HARDWARE,

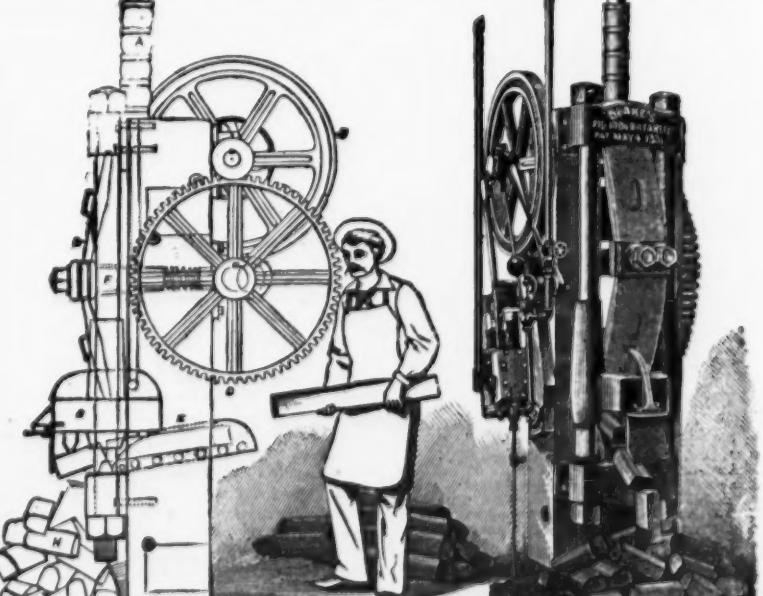
In addition to a large line of Agencies, carry a line of American Goods unsurpassed by any other house in the country, and guarantee to fill orders with more than ordinary promptness.

BRANFORD LOCK WORKS,  
H. DISSTON & SONS,  
YERKES & PLUMB,  
PECK, STOWE & WILCOX CO.,  
OLIVER AMES & SONS,  
MAXWELL ROWLAND & SON,  
WM. ROGERS MFG. CO., Plated Ware,  
ROBT. MANN & SONS,  
NEW LONDON SCYTHE CO.,  
LANDERS, FRARY & CLARK,  
STANLEY & GILMORE,  
STRAP AND T HINGES,  
U. S. SCREW CO., Screws,  
NICHOLSON FILE CO.,  
AUSABLE, CLINTON AND GLOBE  
HORSE NAILS,  
OHIO BARB FENCE WIRE,  
DOUGLAS AXE MFG. CO.,  
WALDEN KNIFE CO.,  
JNO. RUSSELL CUTLERY CO.

ALSO IMPORTERS OF

GEO. WOSTENHOLM & SON'S CUTLERY,  
ROGERS' POCKET KNIVES AND SCISSORS,  
WADE & BUTCHER RAZORS,  
PETER WRIGHT ANVILS,  
GERMAN HARDWARE AND CUTLERY.

## BLAKE'S PAT. PIG IRON BREAKER.



A new and successful machine for breaking pig iron into any length desired, with rapidity and economy. Besides saving in cost of breaking by hand, it secures the greatest economy in melting.

Several machines already in use. Every machine guaranteed against breakage of parts. Requires but three horse-power. Can be run by belt or have small engine attached.

Send for Circulars, Prices, &c.

## BLAKE CRUSHER COMPANY.

Sole Makers, 85 Orange Street NEW HAVEN, CONN.

SAMUEL L. MOORE,

DOUGLASS G. MOORE.

## SAMUEL L. MOORE & SON,

## MACHINE SHOP AND FOUNDRY,

ELIZABETH PORT, and CENTREVILLE, N. J.

IRON AND BRASS CASTINGS, RAILROAD CASTINGS, OIL REFINERY

CASINGS AND MACHINERY A SPECIALTY.

We have a full line of Patterns for Copper and Zinc Smelting Furnaces, Chemical Works Castings and Retorts for Sulphuric, Nitric and Muriatic Acid. Also Patterns for Pyrites Burners, either large or small. Price and specifications of Pyrites Burners and cost of construction, furnished if required. We are the sole makers of an improved Regulus Valve for acid, which has no equal. Steam Engines, shafting, Pulleys, Mill Gearing, Bone Crushers, Dicks' Punches and Shears and all kinds of Machinery built at short notice.

P. O. Address, 47 Bond St., Elizabeth, N. J.



## WHOLESALE METAL PRICES, January 9, 1884.

(For Wholesale Hardware Prices, See Pages 27, 28.)

## METALS.

**IRON.**—Duty: Bars, 8-10¢ to 11-10¢ per lb.; provided that no Bar shall pay a lesser rate of duty than 8¢ per lb. Sheet, 11-10¢ to 10-10¢ per lb.; Band, Hoop and Scroll, 10¢ to 11-10¢ per lb.; Railroad Bars weighing more than 25 lb. per yard, 7-10¢ of 1¢ per lb.

## American Iron.

Foundry No. 1. \$100.00 @ 25.00  
Foundry No. 2. 100.00 @ 25.00  
Gray Forge. 175.00 @ 18.75

## Scotch Iron.

Garnbroe. 21.00 @ 22.25  
Colt. 22.00 @ 22.25  
Shotts. 22.25 @ 22.25  
Glenarmon. 22.00 @ 22.25  
Gartsherrie. 22.00 @ 22.25  
Langloan. 22.00 @ 22.25  
Summerlee. 22.00 @ 22.25  
Dalmellington. 21.00 @ 22.00  
Eglinton. 20.00 @ 20.00

## Rails.

Steel, at Eastern mills. 34.00  
Old Rails, T. 31.00 @ 22.00

## Scrap.

Wrought, per ton, from yard. 22.50 @ 22.00

## Bar Iron from Store.

Common Iron:  
1 to 6 in. round and square. 2.10¢ per lb. 2.10¢  
1 to 6 in. 3/4 in. to 1 in. 2.10¢ per lb. 2.10¢

Refined Iron:  
3/4 to 2 in. round and square. 2.30¢ per lb. 2.30¢  
1 to 6 in. 3/4 in. to 1 in. 2.30¢ per lb. 2.30¢  
1 to 6 in. 3/4 in. and 10. 2.40¢ per lb. 2.40¢  
Bands—1/2 in. round and sq. 2.40¢ per lb. 2.40¢  
Bands—1 to 6 in. 2.60¢ per lb. 2.70¢

"Burdened" Iron, base price. 2.70¢ per lb. 2.70¢

Burden's "H. B. & S." Iron, base price. 2.70¢ per lb. 2.70¢

Ulster Iron, base price. 2.70¢ per lb. 2.70¢

Wrought, per ton, from Rail Rods. 54¢ @ 54¢

## Sheet Iron.

Common American. R. G. American. American.  
Nos. 10 to 16. 3.00 @ 3.25¢ 44¢  
17 to 20. 3.25 @ 3.50¢ 44¢  
21 to 24. 3.50 @ 3.75¢ 44¢  
25 and 26. 3.75 @ 4.00¢ 44¢  
27. 4.00 @ 4.25¢ 44¢

Galvanized. 10 to 20. 2.00 @ 2.25¢ 44¢  
Galvanized. 21 to 24. 2.25 @ 2.50¢ 44¢  
Galvanized. 25 to 26. 2.50 @ 2.75¢ 44¢  
Galvanized. 27. 2.75 @ 3.00¢ 44¢  
American Russia. 2.00 @ 104. B. 94¢  
Russia. 2.00 @ 14¢ 94¢  
American Cold Rolled. B. B. 2.00 @ 75¢

## Iron Wire. See Wire.

STEEL.—Duty: Ingots, Bars, Sheets, &c., valued at 4¢ per lb. or less, 45¢ ad. val.; valued above 4¢ and not above 10¢ per lb., 2¢ ad. val.; valued above 10¢ and not above 18¢ per lb., 2¢ ad. val.; valued above 18¢ and not above 25¢ per lb., Extra. Steel Bars, Rods, &c., cold drawn or polished, in any way in addition to ordinary hot rolling, 1/2¢ per lb. in addition to above; Steel Circular Saw Plates, 16¢ per lb. in addition to the above.

## American Cast Steel.

For American Steel, see Pittsburgh quotations.

## English Steel.

Best Cast. 15¢ per lb. 10¢  
Extra Cast. 15¢ per lb. 10¢  
Circular Saw Plates. 15¢ per lb. 10¢  
Round Machinery, Cast. 15¢ per lb. 10¢  
Swaged, Cast. 15¢ per lb. 10¢  
Best Double Shear. 15¢ per lb. 10¢  
Blister, 1st quality. 15¢ per lb. 10¢  
German Steel, Best. 15¢ per lb. 10¢  
2d quality. 15¢ per lb. 10¢  
Sheet Steel, 1st quality. 15¢ per lb. 10¢  
2d quality. 15¢ per lb. 10¢

**TIN.**—Duty: Plated Sheets, Tagger and Terns, 1¢ per lb.; Bars, Block and Plugs free.

Banks. 22.00 @ 22.00

Straits. 21.00 @ 21.00

English. 20.00 @ 20.00

Bar. 20.00 @ 20.00

## Charcoal Tin Plates.

For each additional X add. 1¢ per lb.

## Coke Tin Plates.

Best. Ordinary. 15¢ per lb. 10¢

15¢ per lb. 10¢</

The Westinghouse Air Brake Company have patented an important improvement recently invented by Mr. George Westinghouse, Jr., for an arrangement of the hose pipes between the cars in connection with the automatic brake, the use of which will prevent the application of the brakes by the bursting of any one hose. With this arrangement trains will never be stopped by the bursting of hose, because it requires two pieces of hose between each car to burst at the same time to empty the brake-pipe. By its use the hose-pipes can be kept in use until they are actually ruptured; whereas, without it, the hose must be examined and removed if they appear to be defective. The increased length of time that hose can be used, and the freedom from stoppage by their bursting, will more than justify the necessary outlay for putting on this arrangement. Cars provided with the double couplings can be run in connection with cars provided with the single coupling.

A novel manner of applying a suspending eye or ring to enameled sheet-metal ware, such as wash-basins and the like, has been patented by W. F. Niedringhaus, of St. Louis, Mo. The vessel is slotted near and parallel to its edge, and into the slot is slipped an eye, having two prongs at its end, in such a way that the eye enters the interior, while the prongs remain at the outside of the vessel. Next the prongs are spread out horizontally and concealed within a bead formed around the top of the vessel. Finally the eye is turned upward, to project over the bead.

Samples of New Instantaneous Process Photography.



View at office door, SCOTT MFG. CO., Baltimore, in rush for SAFETY ICE CREEPERS first icy morning this year.

SOLD BY ALL HARDWARE DEALERS.



Solid Steel Stamped, Very Strong and Light

ICE CREEPER.

**SCOTT MFG. CO.,**  
Sole Patentees and Manufacturers,  
BALTIMORE, MD.

**PATENT OFFICE.**

**F. V. BRIESEN,**  
82 and 84 Nassau Street,  
NEW YORK.

**AMERICAN AND FOREIGN  
PATENTS**  
Solicited promptly and at the lowest rates.



These goods are entirely new, will not break, and will give permanent satisfaction. Address ROB. B. HUGUENIN, Patentee and Sole Maker, HARTFORD, CT., U. S. A.

The locks are adjustable, and hung with weights, allowing of their being locked when open sufficient for ventilation, &c., &c.



## PATENT DASH LAMPS.

BOUDREN'S PATENT.

Fits any shaped Dash on any Vehicle. Fitted with our New Improved Burner.

THE BEST MADE LAMP.

THE BEST LIGHT-GIVING LAMP. THE BEST LAMP TO STAND WIND, RAIN OR JOLTING.

THOUSANDS NOW IN USE.

**White Manufacturing Co.,**  
BRIDGEPORT, CONN.

Makers of Fine Carriage and Hearse Lamps and Mountings.

**BRIER HILL PIG IRON.**

Annual Capacity, 100,000 Tons.

WE MAKE FOUR GRADES, TO-WIT:

**BESSEMER**, for Bessemer Rails and Open Hearth use; made from Lake Superior ores.

**BRIER HILL SCOTCH**, used as a softener and for carrying scrap; equal to Imported Scotch.

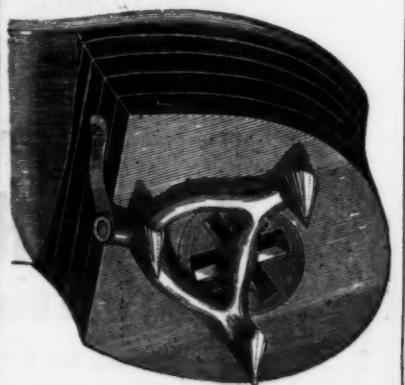
**BRIER HILL or TOD FOUNDRY**, extra strength; made from Lake Superior ores.

**IRON RIVER FOUNDRY**, medium strength; suitable for small castings and general use.

Special attention given to grading our Foundry Iron. Write for Prices.

**THE BRIER HILL IRON & COAL CO.,**  
YOUNGSTOWN, OHIO.

**LYON'S DETACHABLE CHAMPION  
ICE CREEPER.**



Can be attached to or removed from a boot or shoe in two seconds, and does not have to be worn for weeks when there is no snow. Prices and discounts given on application.

**NELSON LYON & BRO.,**  
MANUFACTURERS,  
ALBANY, N. Y.

The Most Durable and Best Selling  
Bucket for Chain Pumps.

It has no valves to become obstructed and no screw joint to become immovable by rust. Advantage of the Crosby Bucket over All Others.—1 It has an air chamber on top which conducts the air to the bottom of the well. 2 It is self-expansive, the base of the bucket being  $\frac{1}{4}$  of an inch larger at the bottom than bore in the tube, which allows it to expand in the side to contract. 3 The wear comes on the whole side, and not on the extreme edge, like other buckets. 4 It contains more solid rubber than three of any other manufacturer.

Three sizes— $\frac{1}{4}$  inch for deep wells,  $\frac{1}{2}$  inch for 10 feet or less,  $\frac{3}{4}$  inch for stock pumps.

No charge for Territorial Rights.

ONE GENUINE  
united. A. C. Crosby  
appears in raised  
letters on base of  
each Bucket.

Send for Price List. Agents wanted in every county, Address A. D. CROSBY, Patentee and General Agent, Cuba, Allegany County, N. Y. For sale by W. & P. Douglas, 5 & 87 John St., New York; H. B. Grifling, 70 Cortlandt St., New York, and all General Hardware and Pump Dealers.

**A. R. WHITNEY & CO.,**  
58 Hudson Street,  
NEW YORK.

OFFER

**Carnegie Bros. & Co., Ltd.,**

**STEEL**  
BEAMS, CHANNELS, PLATES  
AND SHAFTING

At Same Price as Iron.

**FINE**



**TOOLS.**

## PATENT DASH LAMPS.

BOUDREN'S PATENT.

Fits any shaped Dash on any Vehicle. Fitted with our New Improved Burner.

THE BEST MADE LAMP.

THE BEST LIGHT-GIVING LAMP. THE BEST LAMP TO STAND WIND, RAIN OR JOLTING.

THOUSANDS NOW IN USE.

**White Manufacturing Co.,**  
BRIDGEPORT, CONN.

Makers of Fine Carriage and Hearse Lamps and Mountings.

**JOHN T. LEWIS & BROS.,**  
No. 231 South Front St.,  
PHILADELPHIA.

TRADE MARK.

MANUFACTURERS OF

Pure White Lead, Red Lead, Litharge,

Orange Mineral, Linseed Oil,

AND PAINTERS' COLORS.

**JOHN JEWETT & SONS**

Manufacturers of the well-known brand of

**WHITE LEAD.**

TRADE MARK.

ALSO MANUFACTURERS OF

**LINSEED OIL.**

181 Front Street, NEW YORK.

TRADE MARK.

ALSO MANUFACTURERS OF

**WHITE LEAD.**

TRADE MARK.

ALSO MANUFACTURERS OF

# Wholesale Hardware Prices, January 9, 1884.

(For Wholesale Metal Prices, See Page 25.)

## HARDWARE.

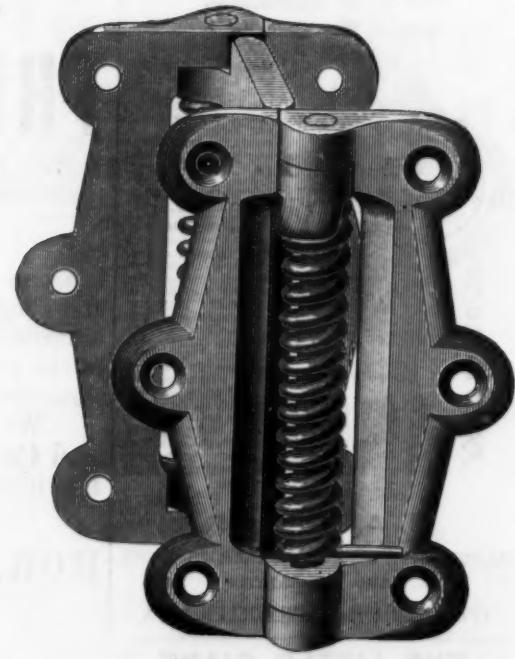
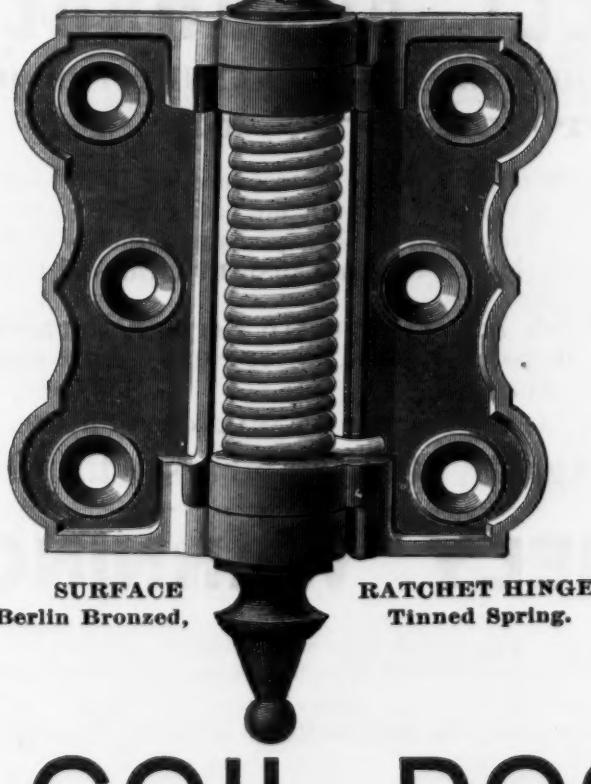
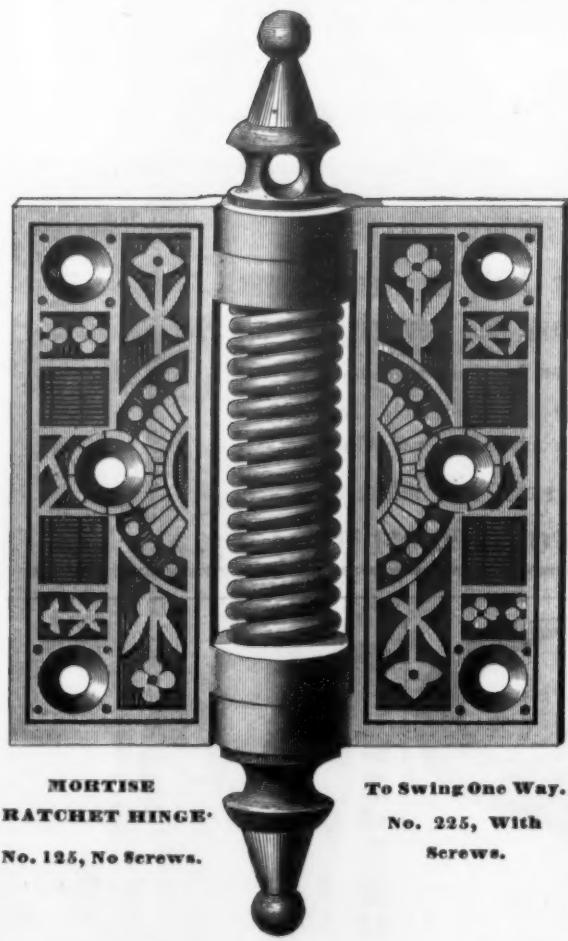




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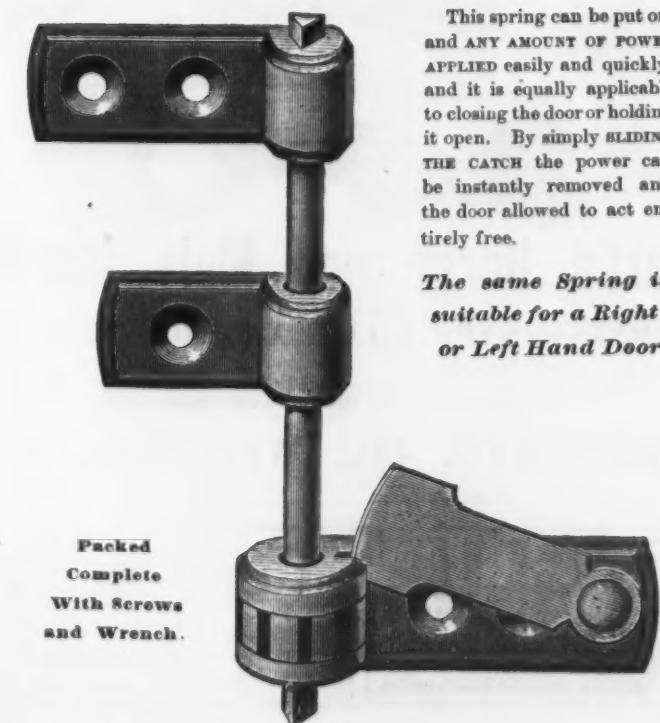
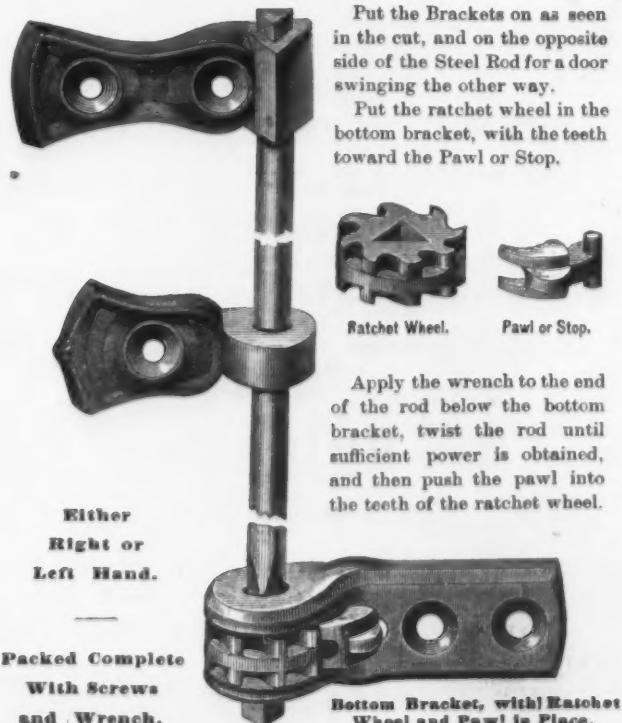
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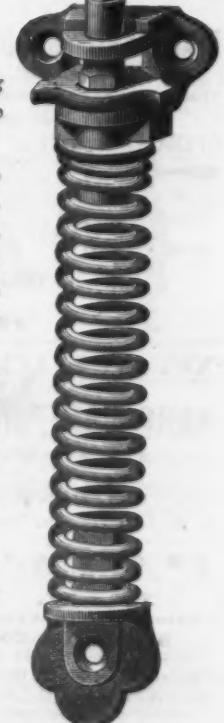
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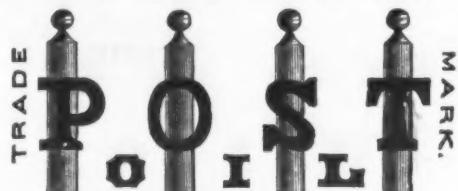
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FOR WET AND DRY LEATHER BELTING.



Registered in the U. S. and Great Britain.

Leather dressed with this oil will not crack or rot, as heat, cold, water or gas has no effect on it. It will spread one-third further and last much longer than any oil for the same purpose. It never turns rancid; will keep in any climate. Belts may be run in water at one end and a hot room at the other, and still be soft, dry and pliable. Warranted not to start glue laps or gum on belts or pulleys, and to keep the surface perfectly smooth. Beware of Imitation. Sold at a Cheaper Price, the Color of which is well Calculated to Deceive.

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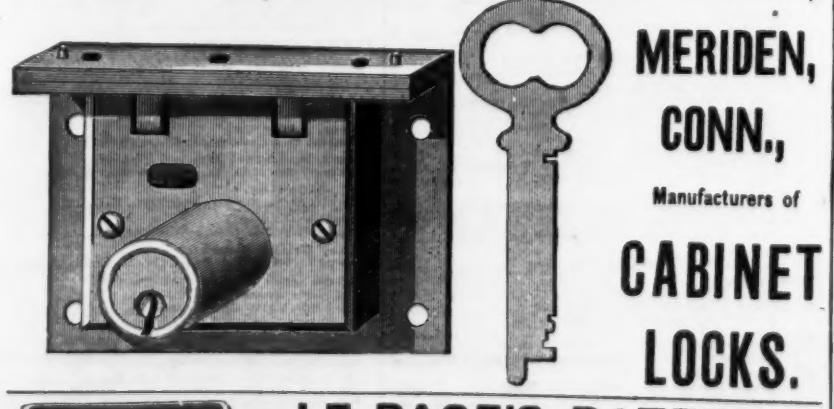
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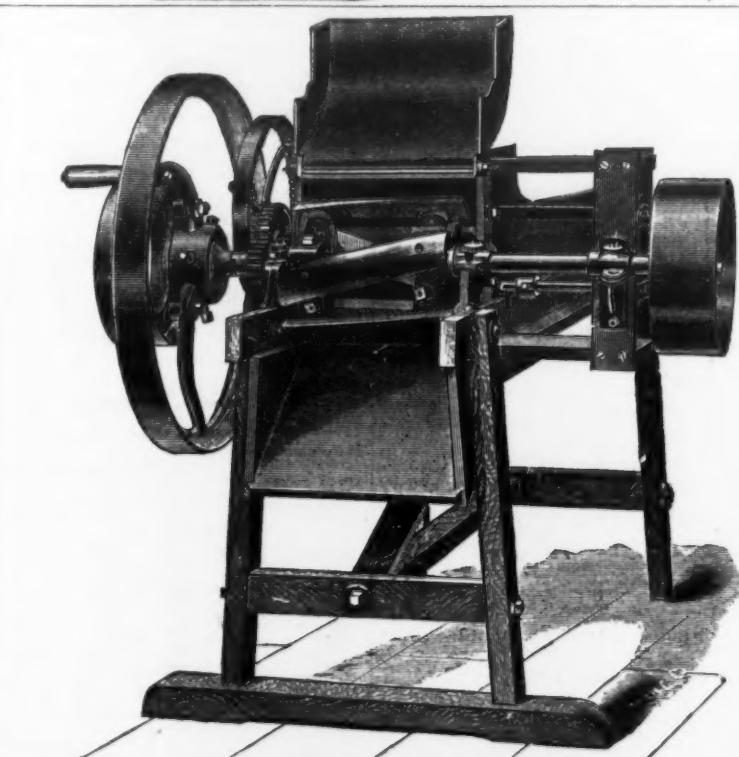
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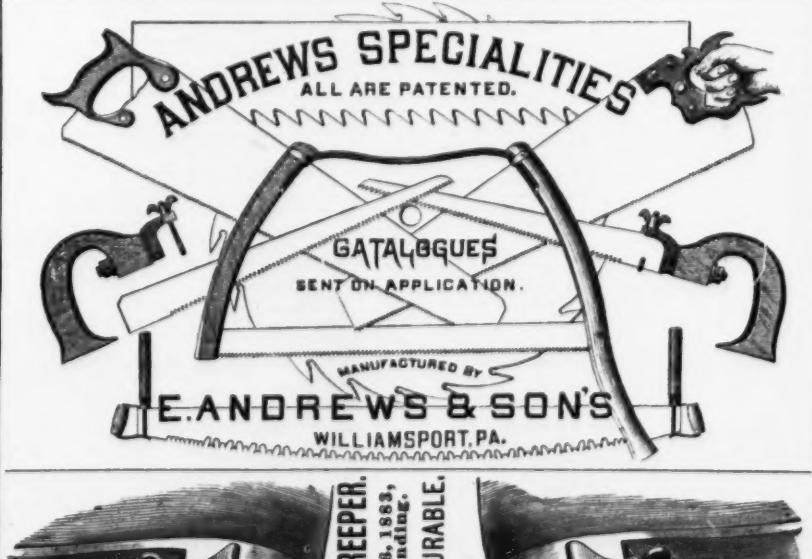
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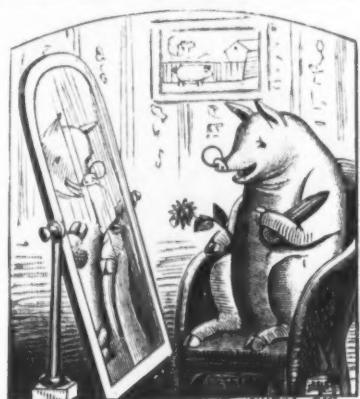
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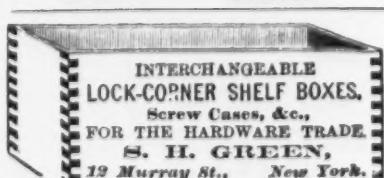
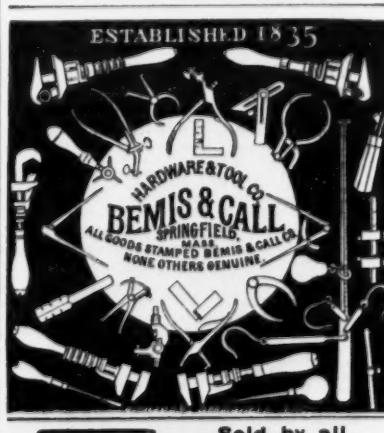
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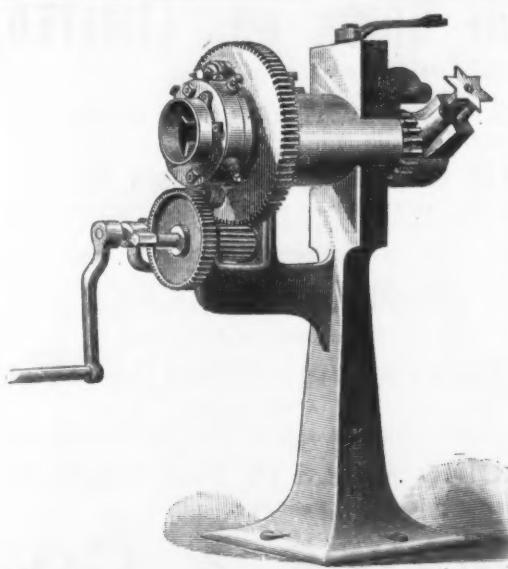
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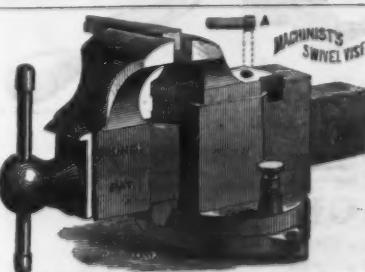


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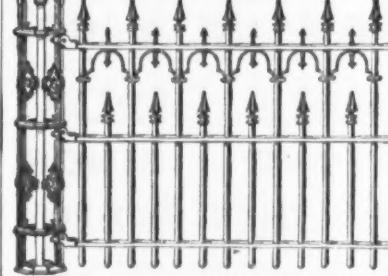
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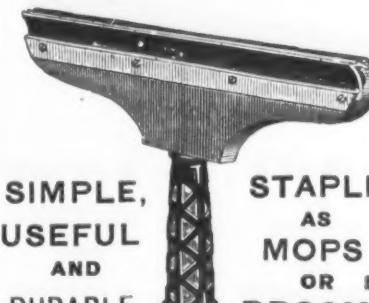
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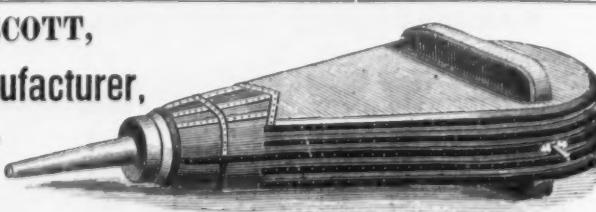
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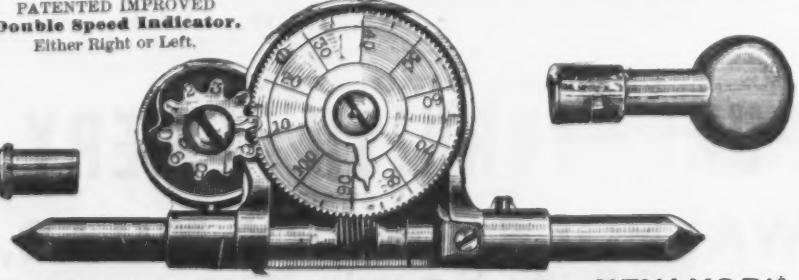
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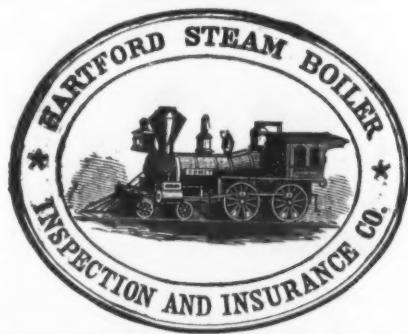
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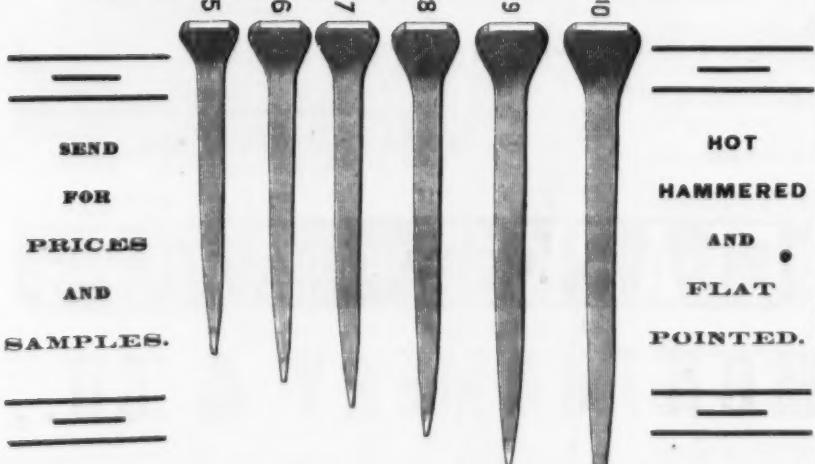


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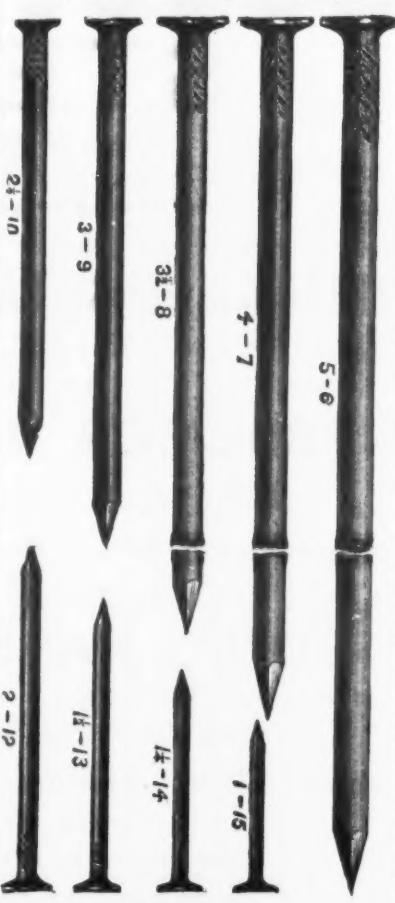
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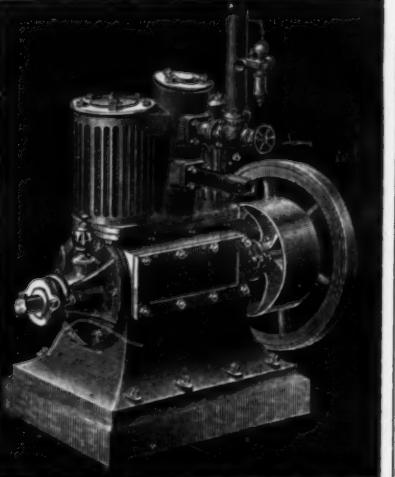
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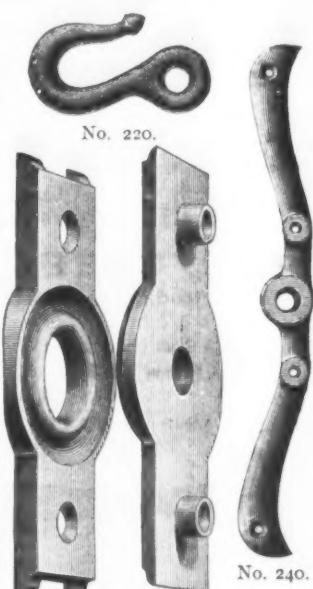
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Claim of Patent issued Sept. 4, 1883.

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Having lately secured of the United States Patent Office the above claim, and as it does not in the least infringe the rights of the Morris Sash Lock Manufacturing Co., we shall hold the said parties responsible for all injury done our business by them, and shall protect our customers to the fullest extent against all claims of infringement by said Morris Sash Lock Manufacturing Co.

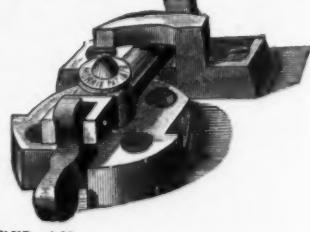
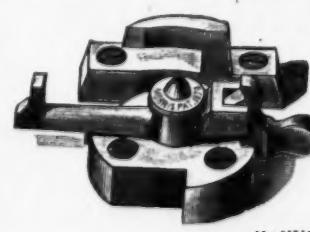
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**THE KEMPSHALL MFG. CO.,**

September 17, 1883.

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MANUFACTURED BY

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**SPECIAL NOTICE TO THE HARDWARE TRADE.**

When we published our Circular to the Trade in August last, in reference to the Kempshall Gravity Sash Lock, no patent had been issued to the Kempshall Company. But to our surprise the Patent Office last month granted them a patent, under which they are claiming the right to make their Fasteners.

The application for this patent was made by one William E. Sparks, and we ask the Trade to note that the Patent Office, in acting upon it, wrote an official letter, on the 18th of last July, rejecting it on one Mr. Morris' patent of 1879, and saying:

"Morris, 22,487, Feb. 18, 1879, shows a Sash Lock which in every respect is equivalent to that shown and described in this (Sparks') application. It is considered a matter of no consequence that the latch engages with the notch in the bottom plate instead of a top plate, and it is held to be immaterial whether the locking notches are above or below the latch."

As the Patent Office in July thought the Kempshall Fastener the equivalent "in every respect" as they say, of the Morris Fastener, it will not be wondered at that we were surprised they should in September grant a patent for it.

We have determined to test the right of this Sparks-Kempshall patent to continue in existence, and we have therefore this week brought another suit against the Kempshall Company, under Section 498 of the United States Revised Statutes, to have the patent declared void by the court, as being for substantially the same thing as our Mr. Morris' prior patent.

The Trade therefore will please take notice, and are respectfully requested to await the result of the litigation before being influenced by the Kempshall patent.

CINCINNATI, November 1, 1883.

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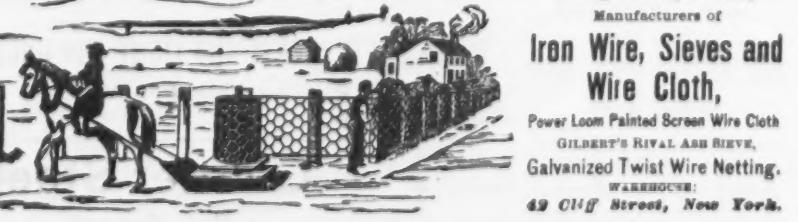
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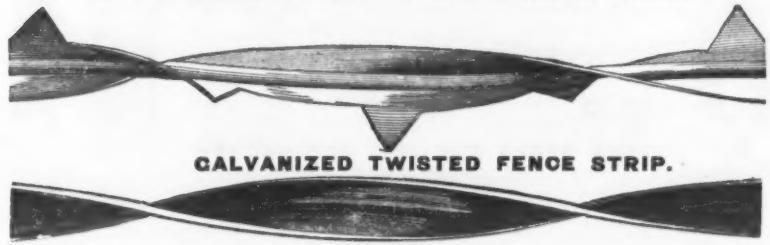
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FISH PLATES, BOLTS, NUTS, SPIKES, &c.

Machinery Steel, Merchant and Ship Iron.

CHESTER GRISWOLD, Vice-President, - 56 Broadway, New York City.

**BOND, PARSONS & CO.,**  
104 John St., NEW YORK. 224 So. 3d St., PHILADELPHIA.

AMERICAN AND FOREIGN PIG IRON,  
Schieleisen, Blooms, Rails, Wire Rods, &c.  
TIN PLATES.

VIVIAN, YOUNGER & BOND, London & Birmingham.

**FRANCIS HOBSON & SON,**  
97 John Street, NEW YORK.

Sole Manufact'rs of "CHOICE" Extra Cast Steel.

Manufacturers of all Descriptions of Steel.

Manufacturers of Every Kind of Steel Wire.

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CHAS. HUGILL, Agent.

**ANDERSON, DU PUY & CO.,**  
(Successors to ANDERSON & CO.), Manufacturers of all Descriptions of

Tool,  
Machinery,

**STEEL.**

Agricultural,  
&c.

Works and Office at Chartiers Station, P. & L. E. R. R. Branch Office, Cor. Ross & First Aves., PITTSBURGH, PA.

D. H. KENT & CO., Limited, Agents, 1009 Arch St., Phila., Pa. M. T. MILES & SON, Western Agents, 170 Lake St., Chicago.

**"VICKERS" LOCOMOTIVE TIRES.**

VICKERS, SONS & CO., LIM'D, SHEFFIELD,

REPRESENTED BY

**TEMPLE & LOCKWOOD, 12 Platt Street, New York.**

Warranted Superior to any Steel in the Market, either English or American, for every purpose.

Also,

Combination Chrome Steel and Iron for Safes, Jails and Deposit Vaults.

Send for Circular  
and  
Price List.

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S. D. KIMBARK, Agent.

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WORKS AT DANVILLE, PA.

**PIG IRON, T AND STREET RAILS,**

RAIL JOINTS AND SPIKES,

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**PITTSBURGH BESSEMER STEEL CO**  
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**STEEL RAILS**  
LIGHT RAILS A SPECIALTY.

P. O. Address, 87 Wood Street, Pittsburgh, Pa.

FOR STEEL CASTINGS.

We are licensing Steel Companies for the use of our Silica Molds for Steel Castings. Reference may be had to the Otis Iron and Steel Co., Cleveland, Ohio; Benj. Atha & Co., Newark, N. J., and the Norway Steel and Iron Works, Boston, who are manufacturing under our patent. For particulars, terms, &c., address

COWING STEEL CASTING CO.,  
CLEVELAND, OHIO.

**R. MUSHET'S**  
Special Steel

FOR

**LATHES, PLANERS, &c.**

Turns out at least double work by increased speed  
and feed, and cuts harder metals than any other  
Steel. Neither hardening nor tempering required.  
Sole Makers,

**SAMUEL OSBORN & CO.,**  
Sheffield, England.

Represented in the United States by

**B. M. JONES & CO.,**  
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IMPORTERS OF

**STEEL AND IRON RAILS,**

Tin and Terne Plates,

Swedish and Norway Iron,

BESSEMER STEEL WIRE RODS.

Pig Iron, Spiegeleisen, Ferromanganese,  
Soray Steel and Old Iron Rails.

MANUFACTURERS OF

**STEEL COMPRESSED SHAFTING,**

"Benzon" Homogeneous Plates

For Boilers, Fire-boxes, &c.

Axes, Crank Pins, Spring Steel,

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Martin-Siemens Steel and Iron

For Railroad purposes.

**F. W. MOSS,**

80 JOHN ST., NEW YORK,

**IMPROVED MILD CENTRED**

**CAST STEEL,**

FOR TAPS, REAMERS, MILLING TOOLS, &c.

Will not crack in hardening taps of any size.

Best, Cheapest and Fastest Selling

**POTS**

On the Market.

Send for discounts.

**R. C. PURVIS,**

407 Cherry St., PHILADELPHIA.

A. PARDEE, Hazleton, Pa. J. G. FELL, Phila.

**A. PARDEE & CO.,**

237 South Third Street,

PHILADELPHIA,

No. 111 Broadway, New York,

MINERS AND SHIPPERS OF

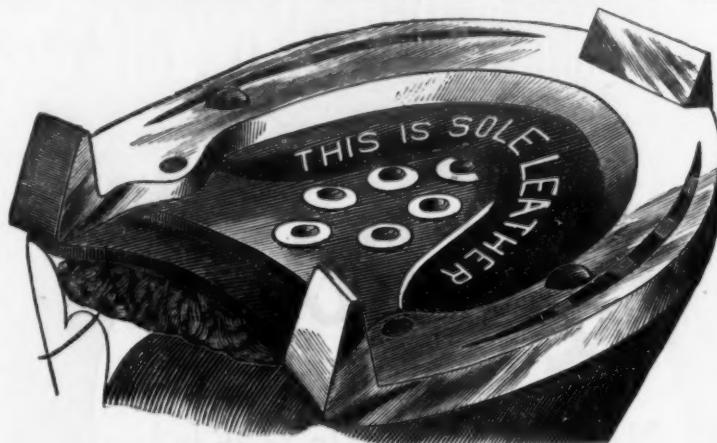
**Lehigh Coals.**

The following superior and well-known Lehigh Coals are mined by ourselves and firms connected with us, viz.:

A. Pardee & Co. HAZLETON,

THOS. FIRTH & SONS, Limited,  
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GUSTAF LUNDBERG,  
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OF STOCKHOLM,  
SWEDISH & NORWAY IRON,  
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ALBERT POTTS, Philadelphia Agent, 234 & 236 N. Front Street.

## THE LOCKIE HORSE SHOE PAD.



Patented June 1, 1880, and May 24, 1881.

The LOCKIE PAD has received the unanimous indorsement of all the leading Horsemen, Liverymen, Horseshoers and Veterinary Surgeons of Chicago and the Northwest.

### SPECIAL DISCOUNT TO THE RETAIL HARDWARE TRADE.

Full directions furnished for putting on the Pads. Address all orders and communications to

**THE LOCKIE HORSE SHOE PAD CO.,**  
44 NORTH CLARK ST., Chicago, III.

### IRON & BRASS GIMLET-POINTED WOOD SCREWS.

Quality, finish and tests as to strength guaranteed equal to any in the market.

With improved facilities and largely increased capacity for production, we can fill orders promptly, and invite inquiries for discounts. A full line in stock.

**PHILADELPHIA SCREW CO., Limited,**  
Twelfth and Buttonwood Streets,

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**SOMETHING NEW!**  
The Diamond Lock Faucet,

PATENTED APRIL 10, 1881.

**John Sommer's Son,**  
Manufacturer of John Sommer's

WOODEN FAUCETS, MALLETS & VARIETY WOOD TURNING,  
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Surpasses any Faucet in the Market.  
A Lock Faucet that cannot be picked, will not leak and keeps tight.

A Faucet that can be driven

and will not split, as it has a solid

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the top.

3d. Made from selected hard rock maple polished, all metal parts used in its construction being pure block tin, which, as commonly known, will not corrode or affect any kind of liquid.

**EMERY  
AND.**

**CORUNDUM WHEELS.**

Can be run in WATER, OIL or ACID as well as DRY.

Polishes and Machinists' Supplies.  
RUB STONES, EVERY WHEEL MACHINERY  
And DIAMOND TOOLS.  
CIRCULARS AND PRICE LISTS.

ADDRESS  
VITRIFIED WHEEL COMPANY,  
WESTFIELD MASS., U. S. A.

**THE HARTFORD HAMMER CO., Hartford, Conn.**

Manufacturers of Solid Cast Steel Hammers  
fully WARRANTED

All Hammers stamped "HARTFORD" are  
See first issue of each month.

**GRAHAM & HAINES, Sole Agts., 113 Chambers St., N. Y.**

**CHEMICALS AND APPARATUS**

FOR THE ANALYSIS OF

**ORES, IRON, STEEL, FUEL, FLUXES, FURNACE GASES, &c.,**

Our Specialty. Being direct Importers and Manufacturers we can offer superior inducements.

**EIMER & AMEND,** No. 205 to 211 Third Avenue.

NEW YORK. Eighteenth Street Station Elevated R. R.

Illustrated Catalogue Mailed on Application.

ESTABLISHED IN 1859.

# THE IRONMONGER

## METAL TRADES ADVERTISER

PUBLISHED EVERY SATURDAY.

THE OLDEST AND CHIEF REPRESENTATIVE OF THE IRON, HARDWARE AND METAL TRADES.

OFFICE: 42a CANNON STREET, LONDON, E. C.

ADVERTISEMENTS AND SUBSCRIPTIONS ARE RECEIVED AT THE VARIOUS OFFICES OF "THE IRON AGE," NAMELY: NEW YORK OFFICE: DAVID WILLIAMS, Publisher of *The Iron Age*, 83 Reade street, who will, on receipt of application, supply specimen copies free.

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In the spring and autumn of each year there is published a special issue, the circulation of which is not less than **Twelve Thousand (12,000)** copies.

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This is an annual, presented free to every Subscriber to the IRONMONGER AND METAL TRADES' ADVERTISER. It contains a large number of ruled skeleton pages for diary and other entries, and in addition much useful reference information, varied from year to year. It is handsomely bound in cloth, gilt; and as copies are used in thousands of establishments for a whole year, it is obviously a medium of exceptional value for advertisements. Sold to non-subscribers at 75 cents.

## THE FOREIGN SUPPLEMENT,

With which is incorporated The Universal Engineer,

is published every fourth week in connection with the extensive and world-wide circulation of the Ironmonger itself. The dates of its publication for the next twelve months will be as follows:

FEBRUARY 2, MARCH 1 and 29, APRIL 26, MAY 24, JUNE 21, JULY 19, AUGUST 16, SEPTEMBER 13, OCTOBER 11, NOVEMBER 8 and DECEMBER 6, 1884.

This supplement is published in

### FOUR LEADING COMMERCIAL LANGUAGES

of the world, including English, and is sent to all the countries where they are spoken, thus placing the contents of the Ironmonger not only within reach, but in the native language of eighty millions of German, twenty-eight millions of Italian, and fifty-one millions of Spanish speaking people; or, in all, over two hundred millions of inhabitants in the principal nations where the best purchasers of manufactured goods are to be found.

Advertisements are inserted in any language at the following

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Advertisers will do well to use Illustrations freely. Where economy of space is an object, a left page illustrated and described in one language can be suitably described in four or more languages on the opposite or right page without illustrating.

### THE WHOLE FOREIGN HARDWARE TRADE,

so far as our experience of more than twenty years is concerned, will be covered by THE FOREIGN SUPPLEMENT at least twice a year. Thus a Price List or Advertisement inserted in the Ironmonger and FOREIGN SUPPLEMENT is a strikingly powerful and most efficient way of publicity, not to be compared with any of the other ordinary channels of communication.

### "Something New. Just Out."

RICHARD PATRICK, President. JOHN H. PATRICK, Sec. and Treas.

**AMERICAN TOOL COMPANY,** 116 CHAMBERS STREET, NEW YORK,

are now Manufacturing a Fine Line of

**Housekeepers' Tool Chests,**

FITTED UP COMPLETE WITH USEFUL TOOLS.

ALSO MACHINISTS' EMPTY TOOL CHESTS.

Also a full line of all the other styles of Tool Chests manufactured by them. Our New Illustrated Catalogue for Fall Season of 1884 will be issued about August 15th, and will be furnished on application, with prices. Every dealer in Hardware, Machinery and Tools is invited to keep a stock of these goods on hand at all times to supply the constant and increasing demand. We are the only company in the United States who make a business of manufacturing Tool Chests exclusively.

**OHIO STEEL BARB FENCE CO.**

FOOT OF CASE AVE., CLEVELAND, OHIO.

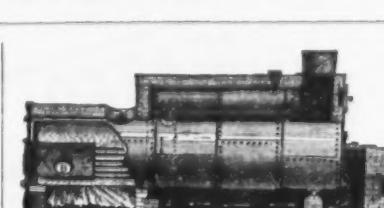
EASTERN OFFICE, 105 JOHN ST., NEW YORK CITY, U. S. A.

Licensed.

**The Lighest Four Pointed Barbed Wire in the Market.**

THE THEREFORE THE CHEAPEST.

Orders from Eastern markets and Seaboard promptly filled from stock in New York City. Samples and Circulars furnished on Application.



**BRIDGEPORT BOILER WORKS**

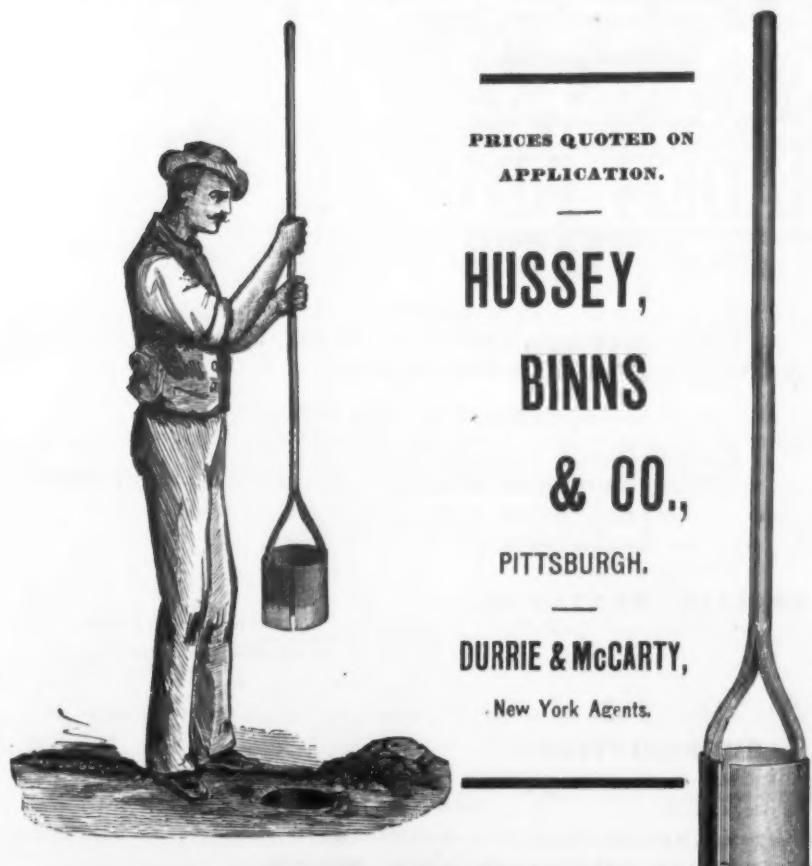
BRIDGEPORT, CONN.

LOWE & WATSON, Proprietors,

MANUFACTURERS OF

The Lowe Patent Tubular Boiler, with and without Superheating Drums. Fourteen years' use proves them the most durable and reliable boiler known. Gives dry steam. The process for combustion of the gases is in the construction and setting. Burns any fuel; obtains as much result from it as any boiler or setting with no more cost and greater durability.

# COMMON SENSE POST HOLE DIGGERS.



PRICES QUOTED ON  
APPLICATION.

HUSSEY,  
BINNS  
& CO.,

PITTSBURGH.

DURRIE & McCARTY,  
New York Agents.

Importers of TIN PLATE, METALS, &c.

**Mica.**

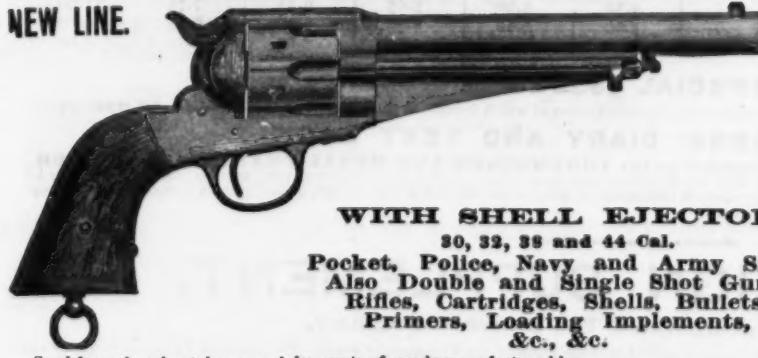
**Mica.**

**Mica.**

STOVE BOARDS, ZINC AND CRYSTAL,  
Full Stock of Russia Iron from No. 8 to No. 15.

MERCHANT & CO.,  
PHILADELPHIA and NEW YORK.

NEW LINE.



WITH SHELL EJECTOR  
50, 32, 38 and 44 Cal.  
Pocket, Police, Navy and Army Sizes.  
Also Double and Single Shot Guns,  
Rifles, Cartridges, Shells, Bullets,  
Primers, Loading Implements,  
&c., &c.

Send for reduced catalogue and discounts of goods manufactured by  
**E. REMINGTON & SONS,**  
283 Broadway, NEW YORK.

**WROUGHT IRON TACKLE BLOCKS.**  
Swivel Hooks for Rope or Chain,  
POLISHED GROOVES, ALL SIZES IN STOCK.  
Also Pulley Blocks for Wire Rope,  
Headquarters for the  
IRVING BRAND WOODEN PULLEY BLOCKS,  
**McCoy & Sanders**, Manufacturers,  
26 Warren Street, New York.

**CINCINNATI CORRUGATING CO.,**  
CINCINNATI, OHIO.  
MANUFACTURERS OF  
Superior Corrugated  
Roofing, Siding, Colling,  
Arches, Lath,  
Etc.  
For Rolling  
Mills, Blast Furnaces,  
Foundries, Machine  
Shops, Car Shops, Boiler  
and Engine Rooms, Etc.  
STEEL and ZINC.  
Fire, Water and Wind Proof. Light, Cheap and Durable.  
Send for Descriptive Illustrated Catalogue.

Improved Champion Dump  
Scraper.

We are the exclusive manufacturers of  
**Byrket's Improved Dump and  
Automatic Steel Scrapers.**

We manufacture the only successful Automatic Scraper in the world. Our Dumps are the lightest and strongest scrapers made. We use two pieces of steel pressed into shape, one for when that breaks the other scraper is ruined, while ours is so constructed that we can replace any part at a trifling expense. We make three sizes, to meet the wants of all classes of Earth Workers. Especially suited for Contractors and Township Road Work. Send for circulars. Manufactured by

**THE CHAMPION SCRAPER CO.,** Troy, Ohio.

## R. T. PETTEBONE PATENT SHOVELS.

Back-Straps entirely protected from wear. Rivets also below line of wear.  
Peculiar shape of Back-Straps positively prevents handles from working loose.  
These Patent Shovels are stronger than the ordinary Back-Strap Goods, besides having all the merits of solid plain Back Shovels.

## PATENT PETTEBONE & SON, WYOMING, PA.

Front of Shovel has same general appearance as  
any ordinary Back-Strap Shovel.  
No obstruction on face of Patent Shovel to  
accumulate dirt when working in heavy soil.



Patent Protected Back-  
Strap applied to our  
Shovels.



BACK VIEW.

# NEW ENGLAND BUTT CO.,

MANUFACTURERS OF

## DRILLED CAST BUTT HINGES,

AND

## "CHINESE" LAUNDRY IRONS, SAD IRONS, &c.

These "Chinese" Laundry Irons are of  
superior quality, made from the best pig  
iron, highly finished, and rounded on  
edges, having Wrought-Iron Handles, with  
neatly molded Tops of Cast Iron.  
The Three Sizes, Nos. 1, 2 and 3,  
correspond in Weight with 4, 5 and  
7 lb. Sad Irons.



"Chinese" Laundry Irons.

NEW YORK OFFICE:  
99 Chambers St.

FACTORIES: Providence, R. I.

The Francis T. Witte Hardware Co.



VALUABLE TO CUTLERY AND SURGICAL INSTRUMENT

MAKERS, CONCAVERS OF RAZORS, AND EDGE TOOL GRINDERS.

## P. LOWENTRAUT,

SOLE MANUFACTURER OF THE



(Patented April 19, 1881.)

## EUREKA CLUB SKATE.

SOLE AGENTS:

SMITH, SELTZER & CO., Philadelphia, Sole Agents for the State of Pennsylvania.  
PAPPENHEIMER HARDWARE CO., Cincinnati, Sole Agents for the State of Ohio.  
SIMMONS HARDWARE CO., St. Louis, Sole Agents for the city of St. Louis.  
SPENCER & UNDERHILL, 94 Chambers St., New York, Agents for New York City and vicinity.  
WM. R. BURKHARD, St. Paul, Minn., Sole Agent for the State of Minnesota.

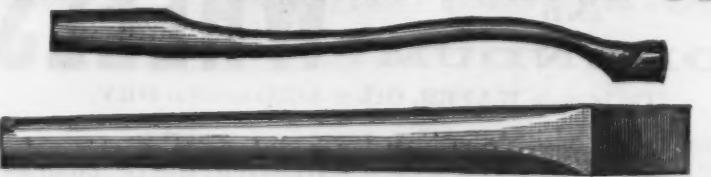
ALSO MANUFACTURER OF

MECHANICS' TOOLS, GENERAL HARDWARE.  
Light and Heavy Steel Ladles a Specialty.

HOUSE FURNISHING GOODS  
AND  
Shoemakers' Tools.

276, 278, 280, 282 HALSEY STREET, NEWARK, N. J.

## V. G. HUNDLEY, PROPRIETOR OF NORTH CAROLINA HANDLE CO.



MANUFACTURER OF  
Handles and Spokes.

79 Reade Street and 97 Chambers Street, NEW YORK.  
HARDWARE COMMISSION MERCHANT.

T. H. BULLOCK,  
BELLows AND FORCE MANUFACTURER,



## PHILADELPHIA.

Lloyd & Supplies Hardware Co.  
Terms, 30 days. For 60 or 90 days, interest added at 10% per cent. per annum.

**Anvils.**  
Peter Wrights, 7 lb. .... 11 @ 1120  
Over 20 lbs. .... 1200  
Trenton Anvils, 100 lb. .... 100  
High Anvils American, 100. .... 100  
**Apple Peasers.**  
Globe Apple Peasers. .... 50 to net  
Penn Apple Peasers. .... 50 to net  
Lots of 10 to 25 dozen special prices

**Axes.**  
Horse Kentucky and Yankee, per doz. .... 80 to 90  
Robert Mann. .... 80 to 90  
Richard Chief. .... 80 to 90  
Bevelled Axes. .... add 500 net  
Double Bit Axes. .... net 80 to 90 @ 15 to 20

**Augers and Auger Bits.**—New List January 7, 1880.  
Bates' Not Augers. .... 100 to 120  
Cook's Augers. .... 100 to 120  
W. W. & Son's Augers. .... 100 to 120  
Benjamin in Pierce Auger Bits. .... 100 to 120  
Griswold Auger Bits. .... 100 to 120  
Cook's " .... 100 to 120  
Jennings' .... 100 to 120  
Borden's Pat. Hol. Augers, list 80 to 100. .... 100 to 120  
Stearns' Pat. Hol. Augers, list 80 to 100. .... 100 to 120  
Balances, Light and Common. .... 33 to 50

**Bells.**  
Bovis Bros. Mfg. Co. Light Hand Bells. .... 100 to 120  
Swing Bells. .... 100 to 120  
Connell's Door Bells. .... 100 to 120  
Gt. Western & Kentucky Tow now list. .... 100 to 120

**Bolts.**  
R. Jennings, new list, Jan. 1, 1884. .... 25 to 50

**Boring Machines.**  
Upright, without Augers. .... List 50 to 100  
Angular, without Augers. .... 67 to 100 @ 20 to 30

**Bolts.**—Eastern Carriage Bolts. .... 100 to 120  
Philadelphia. .... new list 100 to 120  
Stanley, Wrought Shutter. .... 100 to 120  
Brewer's Barber's. .... 100 to 120  
Rackus. .... 100 to 120  
Spofford. .... 100 to 120  
American Ball. .... 100 to 120

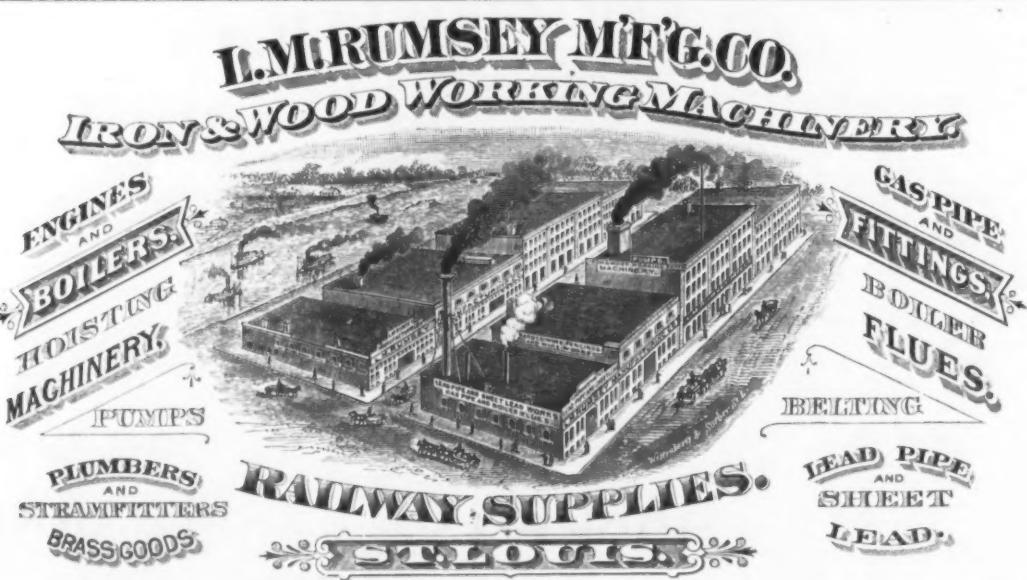
**Bolts.**—Cast Fast Joint, Narrow. .... 100 to 120  
Broad. .... 100 to 120  
Cast Loose Joint, Narrow. .... 100 to 120  
Broad. .... 100 to 120  
" Acorn Loose Pin. .... 100 to 120  
" Maver's Loose Joint. .... 100 to 120  
Wrought Loose Pin. .... 100 to 120  
" Hinge Pin and Back Flaps. .... 100 to 120  
" Narrow, Fast. .... 100 to 120  
" Loose Joint. .... 100 to 120

**Blind Bolts.**  
Parker. .... 100 to 120  
Clark. .... 100 to 120  
Shear. .... 100 to 120  
Lam. & P. .... 100 to 120  
Mutter's. .... 100 to 120

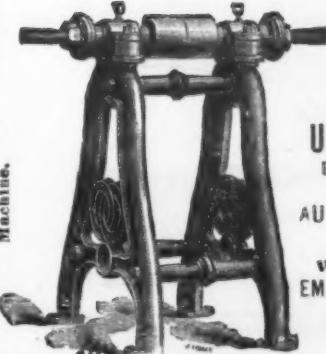
**Chains.**—German Hanger and Coll. list December 31, 1881.

**Galvanizing.**—Pump. .... 100 to 120  
Best Proof Coll. Chain, English. .... 100 to 120

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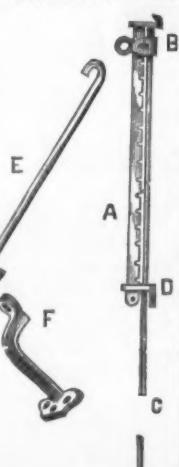
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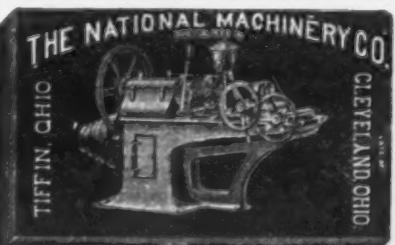


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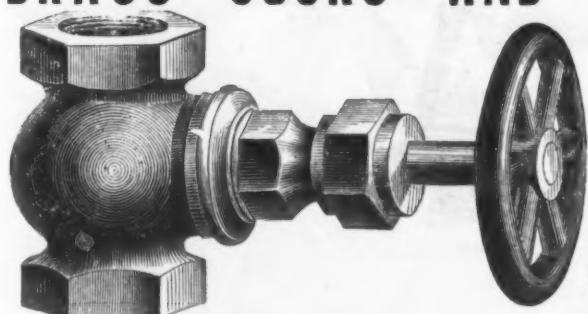
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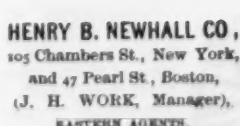
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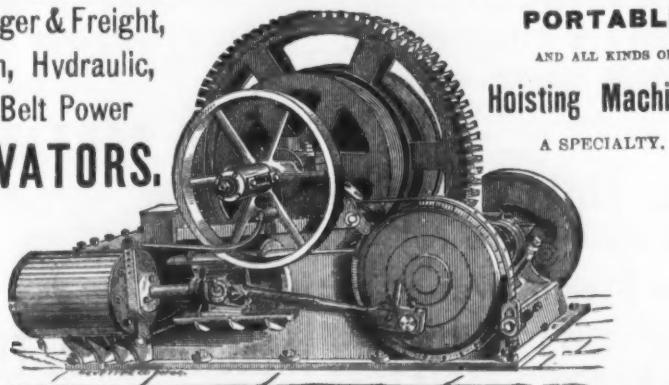


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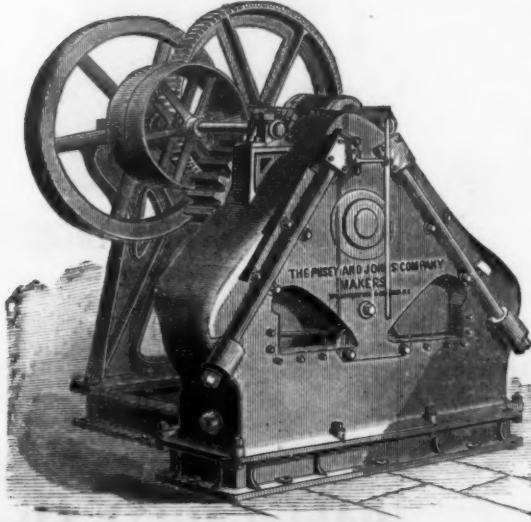


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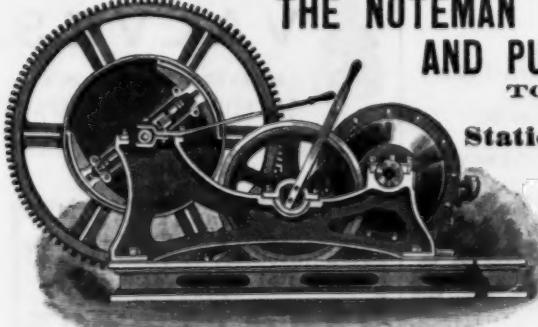
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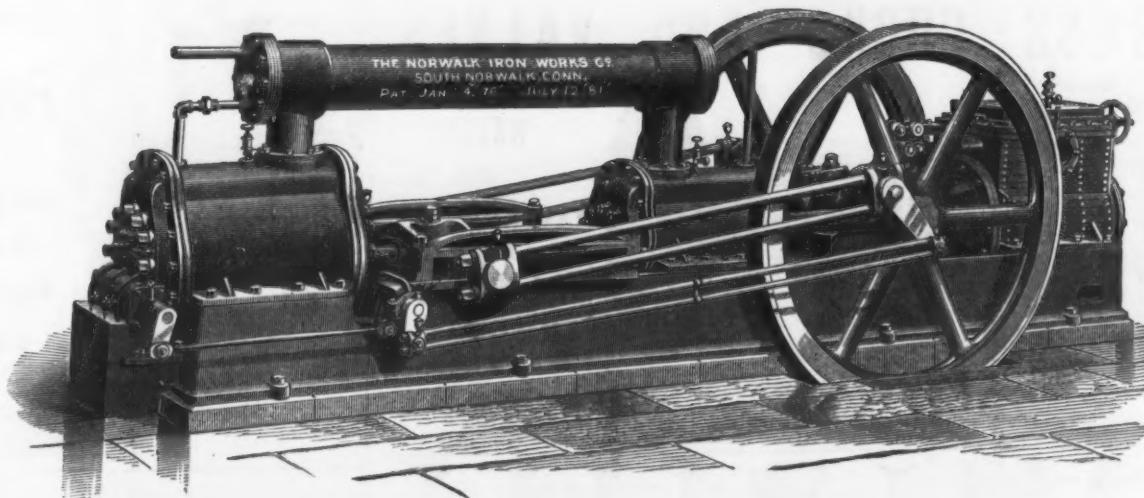
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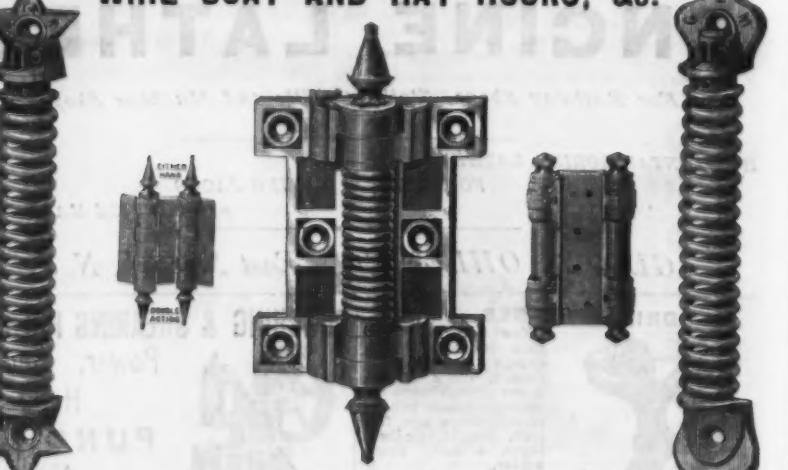
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